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A STUDY IN IMAGINATION.[1]

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A. HISTORICAL INTRODUCTION.

PART I. MENTAL IMAGERY.

The scientific study of the imagination has been limited practically to the last half century, or even the last thirty years. A discussion going back to an earlier date would be merely a matter of erudition and not of great scientific interest.

The first works dealing with the subject from a modern standpoint were written about the first of the nineteenth century, but dealt with mental imagery rather than imagination. In fact, from 1825 until 1890, nearly all of value written in the field of imagination was on the topic of imagery.

This topic will therefore be considered first, because, in the first place, although it is distinct from the imagination proper, the image, as Philippe says, is the "simple substrate" of the imagination as well as of the memory (48:2); and, in the second place, because the type of mental imagery profoundly affects the character of the imagination. Queyrat asserts that "the aptitude of preserving more specially one order of sensations, and consequently of keeping the memory of them, creates the variety of minds." (49:38.)

As early as 1826, in a philosophical work, Bonald made some interesting observations on mental imagery. As would be expected, these are based entirely or almost entirely on personal introspection, and attribute to all men what the writer finds in himself.

[1] Books in the bibliography are referred to by number. (1:52) means page 52 of the first book in the bibliography.

He writes: " . . . . just as a man cannot think of material objects without having in him the image which is the expression or representation of these objects, so he cannot think of incorporeal objects, and those which do not fall directly under his senses, without having in himself and mentally the words which are the expression or representation of these thoughts, and which become discourse when one makes others hear them." (13:125.)

He states in another place that "the word within us is an imitation or a repetition of the word which we have heard." (13:123.)

Although Bonald limits the word image to an auditory representation, he gives a place to the representations of all the special senses. Thus: "man thinks of material objects by the impression which he is actually receiving or which he has received, an impression which is an image, a sound, an odor, or a taste, etc., according to the organs by which these impressions reach the soul. . . . ." (13:385.)

In Cardaillac's writings we find the germ of the idea of kinæsthetic imagery. His "Elementary Philosophical Studies" appear to be the original inspiration of those numerous French monographs on "La Parole Intérieure." Like all the early writers in this field, he generalizes from his own introspection. Nevertheless his work is valuable as a good description of one type.

"For what," he asks, "is reflection, meditation if not talking to ourselves? And as we can talk to our fellows only by means of the word, in the same way it is only by the word that we can talk to ourselves. It is by the external word that we express our ideas to others, and it is by the internal word that we express them to ourselves. Deprive us of the *means of articulation*, and we are incapable of showing our feelings, our affections, ideas, opinions, beliefs, our thoughts of every kind. Deprived of the internal word we can neither reflect nor meditate. (15:285.)

Cardaillac is acquainted with visual imagery, but regards it as subordinate. Thus: " . . . who can represent to himself a color in a manner as exact and as distinct as when it is before his eyes? The memory of the word on the contrary is as exact, as precise, and as rigorously determined as the sensations we hear can be." (15:304.)

But the memory image for him is not auditory; it is articulatory. "In the memory which constitutes the internal word, the sound which is its (the word's) substance has disappeared. There remains only the articulation." (15:305.)

Between 1830 and 1880 very little advance was made. But about the latter date investigations in imagery were being carried on by Galton, V. Egger, and Stricker.

Galton's classic study by means of the questionnaire it is unnecessary to describe. It is sufficient to say that it was concerned chiefly with visual imagery, and was aimed primarily to discover differences in extensity and intensity rather than quality. He found that men of science were comparatively deficient in visual imagery, that females were superior to males, and public school boys to men. (28:99.) He suggested that there might be analogous representations of other senses which might take the place of visual images. He writes: "I am, however, bound to say that the missing faculty seems to be replaced so serviceably by other modes of conception, chiefly I believe connected with the incipient motor sense, not of the eyeballs only, but of the muscles generally, that men who declare themselves entirely deficient in the power of seeing mental pictures can nevertheless give life-like descriptions of what they have seen . . . ." (28:88.)

Galton found that the field of mental vision was often greater than that of actual vision, and that this was more frequent among men than among boys. (29:314, 315.) He also compared the "generic image" to a composite photograph, an idea adopted by many succeeding authors.

Bain, in criticising Galton's work shortly after the latter's first essays appeared, states that "an observation of high or low visualizing memory becomes psychology the minute the property is connected with some second property, as cause, consequence, condition, concomitant, and not till then." (7:566.) This, he thought, Galton had failed to do. He himself suggested emotion (7:569) and artistic ability (7:570) as being possibly connected with the visualizing power in the ways above mentioned.

"The ear," he says, "plays a part in our intellectual being only second to sight." He suggests that in this we may find an explanation for the fact that one may be deficient in visual imagery and yet get through life creditably.

Bain was acquainted with kinæsthetic imagery also. What description could be better than this? "When we recall the impression of a word or sentence, if we do not speak it out, we feel the twitter of the organs just about to come to that point. The articulatory parts—the larynx, the tongue, the lips—are all sensibly excited; a suppressed articulation is in fact the material of our recollection, the intellectual manifestation, the idea of speech." (6:357.)

As early as 1880, therefore, Bain was familiar with the three chief forms of mental imagery now recognized. In fact he believed that "all the sensations of the senses can be sustained in like manner, some more and some less easily; and they can afterwards be revived as ideas by means of associative forces; (6:355.)

Several investigations have been undertaken on lines similar to Galton's. Although out of chronological order, Armstrong's study of 1894, using the same syllabus, may be here mentioned. In general, its results were the same as Galton's. He found a sort of rhythm in the imagery of his subjects. (3:504.) He says that "the most striking phenomenon shown is the intimate relation of imagery and attention, and the effect of the latter on the various phases and characteristics of the former." (3:505.) A little lower average of imagining power was found among those who stood highest in their respective classes than among their classmates.

Perhaps there should be mentioned here French's study of the "Mental Imagery of Students" (1902) by means of Titchener's questionnaire on "Ideational Type." He found among Vassar students that individual differences were almost entirely a matter of degree. All could call up visual, auditory and tactile images, while only one or two lacked either taste, smell, temperature or motor images. This, however, he thought, might be due partly to the fact that all the subjects were young women. (25:55.)

In 1880 appeared Stricker's "Studien über die Sprachvorstellungen." Thinking silently (das stille Denken) and word ideation (das Wortvorstellen) are for him the same thing. (58:9.)

The sound image forms no part of his word image. (58:20.) He also excludes all visual images of printed or written forms. (58:20.) To him it is self-evident that taste, smell or touch images do not enter into the word image. He therefore concludes that "word images are motor images." (58:33.) He believes, moreover, that anatomical considerations make probable "the hypothesis that the word images consist in the consciousness of impulse which are sent out from the speech centre to the muscles." (58:30.)

Stricker's "Studien über die Bewegungsvorstellungen" (1882) is, like his study of word images, mostly the result of personal introspection. His general standpoint is the same. Muscle-feeling is a prerequisite to motion, and by muscle-feeling one is to understand the feeling, or the perception, which we receive from our own muscles. (57:7.) He can image to himself no movement without muscle-feeling. (57:24.) He distinctly changes his attitude as to the substrate of these "Muskelgefühle," however. He says that whether the muscle-feelings arise from motor nerves, or from sensory nerves, or from both at the same time may be permitted to remain uncertain. (57:9.)

At the same time that these investigations were going on in England and Germany, V. Egger, in France, was studying

what he calls "La Parole Intérieure." His book with this title is a lucid exposition of the auditory type of verbal imagery. It is prefaced with a good historical introduction going back to Plato and Socrates, and quoting among others Bossuet, Locke, Leibnitz, Bonald, Maine de Biran, and Cardaillac.

He writes that "la parole intérieure" is more feeble than "la parole extérieure," but is much more rapid. (24:67, 69.) The following deserves reproduction verbatim. "In the internal word it suffices that we understand ourselves; we can then speak very low, very quickly, with little distinctness, abridge phrases, replace usual turns and expressions by others more simple or more expressive to our taste, modify the syntax, enrich the vocabulary by neologisms or borrowing from foreign terms; we can express to ourselves the entire personal 'nuance' of our feelings by terms of which we can create the sense and usage. . . . The internal language is our affair; we use it according to our fancy. It is in great part personal, a thing not permitted to the audible language which is essentially an instrument of society." (24:71.)

To Egger "the internal word is a simple image, an image purely of sound." (24:75.) Except in abnormal and pathological cases, the tactile (buccal) image is reduced to an image that the observation cannot grasp, if not to absolutely nothing. (24:76.)

The sonorous character of the word image is to him of general application, although he admits the possibility of individual variation, presupposed by the law of habit which he invokes elsewhere to explain the general sonorous character of the image. (24:81.) Egger thinks that the buccal-tactile elements had not yet been eliminated from the word image at the time that the Egyptians invented their ideographic form of writing. (24:84.)

Egger classifies the internal word into the calm and the lively form. (24:183.) The internal language becomes lively under the influence of passion and the imagination. (24:165.)

Just as the auditory elements drove out the tactile, they also drove out the visual from the word image. "The sound images have driven out, little by little, the visual images from their legitimate pre-eminence. Sound images have become the principal ones for the consciousness, *because they alone can serve as a model for a material expression of the thought*, which is at the same time *prompt and easy*."

The sign in language is always the most intense state in a given group. (24:281.) It is the image which carries the meaning. Egger admits the possibility of other forms of internal language. A man both blind and deaf would have a tactile language. (24:288.)

He holds that the existence of an internal language is universal but not proved to be absolutely necessary. (24:289.)

Paulhan, in his "Le Langage Intérieur et la Pensée" of 1886, shows that the investigation of mental language imagery has got beyond the personal stage. For "la parole intérieure" he substitutes "le langage intérieur," and he puts the sense fields more nearly on a parity. He says that "the internal language is a complex phenomenon, comprising visual, auditory, motor, tactile, and abstract representations. This last expression is particularly noteworthy. Some French authors, writing later, have not hesitated to use the term "abstract images." (48:1.) By abstract representations Paulhan means "residues of sensations and tendencies; organized and systematized. They can represent, without resembling, acts, sensations, complexes of sensations, signs, or words." (48:4).

As to individual differences, he writes: "each class of representations (visual, auditory, motor, or abstract) may predominate with varying vivacity in different individuals, and even in certain cases may constitute the only noticeable part of the signs which compose the internal word." (48:2.)

To Paulhan "thought is a 'langage intérieur,' and cannot be reduced to words or images of words: the abstract idea exists by itself under the form of a residue of an abstract representation: thought is a 'langage' not a 'parole.'" (48:5.)

In 1887, appeared an article by A. Binet on the "Intensity of Mental Images." He writes: "the world of images, which each one of us carries in his soul, has its laws like the material world which surrounds us; these laws are throughout analogous to those of organized matter, for the images are living elements which are born, transform themselves, and die." (9:473.)

One factor influencing the intensity of images is the strength of excitation which accompanied the original sensation. He thinks that the physiological process that corresponds to a strong image must be very different from that which accompanies a weak one, and that in the former case there must be disintegration of a greater quantity of nervous matter.

The study of the intensity of images is a study of the origin of our beliefs. (9:474.) Suggestion in the case of a normal person produces an idea only, in the case of the abnormal it produces sometimes an hallucination. This is due partly, (9:479) but not wholly, to hyperexcitability which lends energy to the idea. (9:475.) "That which gives intensity to the idea suggested is the manner in which one suggests it; it is the tone of the voice, the authority of the person, the mode of affirmation."

The personal equation is a large factor, into which the sex-

ual element largely enters. One man succeeds in suggestion where another fails because "he is the one loved." (9:478.)

The force of suggestion by resemblance depends upon the amount of resemblance. (9:481.) Binet conducted experiments which seemed to prove that in the case of hyperexcitables peripheral excitations produced a general increase of power (motor) and even led to the revival of memory images which could not otherwise be recalled. (9:482.)

Factors weakening the intensity of the suggested image, were resistance on the part of the subject (9:486), skepticism (9:488), and a counter suggestion of paralysis. (9:488.)

Binet and Féré the year previously noted in the case of hallucination, "the external projection not only of the (suggested) images, but beside of the bond of association. . . . . If the image furnishes the materials of the hallucination, the associative bond gives it its form." (11:162.) "Association produces a belief, a belief in the reality of the association. (9:477.)

M. E. Egger, in 1887, considered incidentally the place of the imagination in the development of the intelligence and of the image in the development of language. (25.)

In 1888, in his "Le Langage Intérieur," Ballet analyzes the word image into (a) the auditive image, corresponding to the heard word; (b) the visual image, corresponding to the read word; (c) the motor image of articulation, corresponding to the spoken word; and (d) the motor graphic image, corresponding to the written word. (8:14.)

Ballet aims to explain morbid phenomena by the study of the normal, and so first discusses the development of the function of language in the individual. For this purpose he divides persons into three classes:—the auditive, the visual, and two classes of motors as indicated above.

The latter part of the book, which need not be discussed here, is concerned with a discussion of diseases of language based on investigations in the normal fields. (8:172.)

Oelzelt-Newin (1889) distinguishes between "a function of the imagination which Meinong calls 'generative' and a second which he calls 'constructive.' The 'generative' brings forth component parts, the 'constructive' unites them." He says that "both processes take part in the production of images, but also can be separated clearly in fact." (46:15.)

His aim is æsthetic and he draws examples from music and the lives of artists as well as from psychiatry. He discusses the origin of the image, its properties, conditions, development and bodily substrate, as well as imagination in animals. At the end of the volume (46) there is a voluminous bibliography.

Taine in his work on the intelligence (1889) treats the mental image with great detail and great wealth of illustration, and with greater insight than other authors of his period. (60:35,41.) He considers the nature and reduction of images, and the laws of their revival and obliteration. The connection of general names and vague images; the existence of sensations in the mind as tendencies without express images; abnormal phenomena, such as obliteration of whole groups of images, loss of memory, and double personality, are treated under the general head of images. He defines the image as "a spontaneously reviving sensation, usually less energetic and precise than the sensation proper." He recognizes images of sight, hearing, smell, taste, touch, *i. e.*, images of all the special senses. Taine also discusses illusion in connection with the sense image. (60:219, 264.) In illusion the image to some degree acquires the energy and precision of sensation.

Queyrat defines similarly the image. In his study of the imagination of children (1893), he says that "the image is a reproduction of sensation, a reproduction fainter and more general than the original, but always capable . . . . of acquiring under certain conditions an intensity such that one would yet believe in the reality of the object." (50:8.)

Van Biervliet in his "Images Sensitives et Images Motrices" (1897) through introspection and consideration of the results of anatomy reaches the following conclusions:

"It is necessary to conceive every sensation, every cerebral image (representation, hallucination, or memory) as *a quantity of movement.* Every cerebral image is sensory: the images which represent movements represent them as completed, that is, as seen, heard, or felt."

Every cerebral image is motor, because being a quantity of movement introduced into the organism from without, it must leave the organism under the form of muscular activity."

Every image originating at the level of the centre of projection, however feeble it may be, is drained by the descending motor fibres, which connect the centres to certain groups of muscles."

Every image which has reached the level of the association centres is drawn off by the descending paths in the centres of projection and by the motor paths."

One cannot make a radical distinction, a distinction of nature, between motor and sensory images." (62:128.)

The idea that every image tends to objectify itself will be met later on in a discussion of the works of Ribot and others.

In 1898, W. Lay made a study of the mental imagery of 100 students of Columbia College and of 120 artists. He combines this with results of his personal introspection.

He distinguishes between imagery and the imagination, saying that "the possession of creative imagination implies mental imagery but not *vice versa*. (38:2.)

Lay recognizes very many more kinds of mental imagery than had been considered commonly before this by writers on the subject of mental imagery. As the result of five series of experiments and of personal introspection, he differentiates ten groups which are as follows:—(1) visual, (2) auditory, (3) tactual, (4) gustatory, (5) olfactory, (6) thermal, (7) motor, (8) those of pain, (9) organic, (10) those of emotion. (38:4 and following.)

Lay brings out the great range of individual differences, and gives several curious instances, such as that of the sculptor who arranged his images according to their vividness in the following order:—touch, organic images, sounds and sight. (38:22.)

Macdougal in his discussion of music imagery states that "the function of music is to indicate or produce a mood rather than to communicate a set of images." (42:463.) This suggests Ribot's affective imagination and his ideas as to the nature of musical composition. A piece of music, says Macdougal, may suggest a vast number of things, but it does not mean these things "as a word does the object for which it stands." (42:463.) He believes that the symbols of music might perfectly well be employed to express particular images by means of the three forms of association, which he calls association by convention, by composition and by analogy. (42:464.) He recognizes the close connection between the imagination and the affective processes. (42:476.)

Philippe's "L' Image Mentale" (1903) treats of the evolution and dissolution of the image. The image is the common substrate of the imagination and the memory. He writes: "the image is neither a memory nor an invention, it is a simple representation. . . . " (49:3.) And again, of images, he asks, "What is in fact their true rôle in our memory?" and answers, "that of a simple substrate." (49:2.) "In reality," he says, "the imagination in the mental organism has three distinct functions: reproductive, creative, and representative. The last, beside, is the only one which is autonomous. It constitutes, indeed, the foundation of its (the imagination's) activity. (49:1.)

The image, "the psychological cell is in reality as complex as the physiological cell." (49:5.)

A distinction is made between fixed memories and mobile and unstable images. (49:131.) Of the latter he says that "by a constant application of the law of economy, useless de-

tails disappear to make place for what is necessary to the whole. All normal life so develops." (49:132.)

The image is the resultant of forces external and internal, forces which act upon the individual not only as an individual but also as a part of society. So there are, so to speak, not only personal but social images common to all individuals of the same tribe or race. It is by these social images that mental communion is possible. (49:132.)

This study is based on answers to questions given by two physicians, a painter, a doctor and two students of philosophy.

Lemaitre in his "Le Langage Intéreur des Enfants" (1904) divided his subjects into six classes: verbo-visual, symbolo-visual, auditivo-visual, visual-motor, verbo-auditive, and verbo-motor. (39:8.) He also recognizes an equilibrated type where all the usual types of mental imagery are found in fairly equal degree.

He tested these various types for memory as to time required for recall and degree of accuracy of recall. He found the auditivo-visual and the equilibrated types to clearly predominate in both respects, while the motor type was distinctly inferior. The auditive and the visual types were about on the same footing. (39:35.)

Lemaitre makes the interesting observation that the quarrels of the scholastics as to universals was caused by individual differences in endophasy. (39:42.)

He examined twenty-eight children as to their ideas of the infinite. Six could make no answer. The visual type excel the others. Two of these saw the starry heavens, two a closed circle, and one a black point on a white background. The motors could not represent infinity to themselves. Among the auditive is noticed a disagreeable feeling of contraction, choking oppression.

In a test of ideas of space the results were similar, except that among the auditive no mention is made of any feeling of oppression.

With regard to this feeling of constriction, Lemaitre says he has noticed it five or six times and always with the auditive. He is tempted to believe that "the psychophysical relation in this group is more intense than with the visual and motor." The fact that sound representations seem to have more affective tone than sight or motor representations has been noted before, and might be considered in connection with Macdougal's and Ribot's ideas as to the nature of musical imagination.

Lemaitre thinks that the motor escapes these oppressive feelings by his ability to give external expression to them, while the visual find relief on account of greater imaginative re-

sources which tend to induce him to explore the new rather than search into the depths of what is already known.

Wallaschek's "Psychologie und Pathologie der Vorstellung" (1905), attempts to give a physiological explanation of the image. His whole work is supported by the "psychology of exceptions" upon the importance of which he insists. (64:187.) The first division of his work discusses speech-paths, singing, reading, writing, mimicry, gesture, and tone and music centres. The material used is largely pathological. In the second part he discusses what he calls secondary phenomena, which are divided into secondary sensations and secondary images. As an example of secondary sensations he mentions colored hearing, which is due to "unequal extensibility of the blood vessels of the brain." (64:187.) Thus the auditory centre on stimulation receives an increased flow of blood, which flows over into any other centres whose blood-vessels are easily extensible, sufficiently so as not to need actual peripheral stimulation in order to be awakened to a state of activity sufficient for real sensation. Wallaschek asserts that all secondary phenomena are of vasomotor origin. Even instinct is due to the anticipatory function of secondary sensations. That is the vasomotor system of the brain is from the first such as to allow certain blood overflows, the basis of instinctive action.

Wallaschek notices the close correlation of the emotions and the imagination (64:194), and refers particularly to the "associative feeling effect of music." (64:247.)

Meumann in "die Experimentelle Pädagogik," 1906, gives a résumé of the methods for the determination of types of imagery.

He distinguishes between pure and mixed types and types where the images of words and the images of things predominate. He points out that even the pure types are not fixed and unchangeable, but that the elements of the image varies with the character of the object imaged. "Sachvorstellungstypen" and "Wortvorstellungstypen" are the main divisions, each of which contain pure and mixed types. Beside these there are combination of the "Wortvorstellungstypen" and the "Sachvorstellungstypen." (45a:34.)

He describes also carefully various methods in use for the determination of types. He groups them under the following heads:

A. Methods of secondary stimuli, opposing, or supporting.

B. Methods of offering memory stuff with the adequate or inadequate means.

C. Reproduction methods.

D. Kraepelin's method.

E. Indirect methods.

F. Individual artifices for the discovery of types of imagery.

Meumann points out that any of these, to give exact results, must yield themselves to a process of measurement. (45a:37.) As he hopes, this review of methods will undoubtedly be of great service to the experimenter in the field of experimental pedagogy. (45a:62.)

It will be seen that in the last thirty years some progress has been made in the study of mental imagery. The early investigators emphasized one form of imagery at the expense of the others. Thus, with Galton the visual image was the main thing; other forms of representation were hardly more than incidental, or at most, supplementary. With Lay we have at least ten forms of mental imagery. We also see a great change of attitude in this respect, that whereas at first each writer thought that his imagery was practically the only imagery, that now all recognize that variations in imagery are as numerous as individuals.

It will be noticed that French psychologists have been largely interested in language imagery. But here a change is evident in this, that while at first they spoke of "La Parole Intéreure," now they speak of "Le Langage Intéreur." Any image, whether verbal or not, belongs to language imagery if it serves as a bearer of meaning.

Since the time of Galton much has been done to explain the causes of those variations in the intensity of images which he noticed; so that Bain's criticism of his work has had its effect.

The influence of the feeling and the emotions in this respect has been frequently noticed, as well as their power of calling up and associating various sorts of images. This is especially noticeable in the auditory field.

In connection with mental imagery there still remain to be considered several discussions as to the connection between the image and the idea, and the image and thought.

Stout in his "Analytical Psychology" (1896) maintains the existence of "presentational" forms of consciousness apart from imagery (55).

Angell denies this (2:650). He writes: our positive ground for assuming the presence of the image is two-fold; first the very origin of the cognitive consciousness through the action of the senses; second, the fact that accurate introspection always reveals the image explicit or implicit." To which, of course, it may be and is replied that an implicit image, if by this is meant one not actually present in consciousness, is no image at all.

Thought without imagery is to Angell as distressing as "a

Kantian 'noumenon' turned up in the midst of a well-behaved lot of 'phenomena.' " (2: 65.)

Stout's "Manual of Psychology" (1899) states that "an idea can no more exist without an image than perception can exist without sensation. But the *image is no more identical with the idea* than sensation is identical with perception. The image is only one constituent of the idea; the other and more important constituent is the meaning which the image conveys." (56:394.)

James in his "Principles" (1896) also distinguishes sharply between the image, especially the blurred generic image, and the concept. He states that a blurred picture is just as much a single mental fact as a sharp picture is; and the use of either picture by the mind to symbolize a whole class of individuals is a new mental function." French psychologists have written much on the same topic.

Taine in his work previously cited (1889) states that "a general and abstract idea is a name, nothing but a name; the significant and comprehended name of a series of similar facts, or of a class of similar individuals, *usually accompanied* by the sensible, though vague representation of some one of these facts or individuals." (60:138.)

Queyrat (1893) says: "we do not think without the image. Every idea even the most abstract and the most immaterial is incarnated in the word which is already a sensible form." (50:39.)

Weber (1896) distinguishes between images and ideas. He writes: "real objects are not only objects of perception, and they do not correspond to mental images only; they are also objects of thought; they correspond to ideas, concrete ideas." (65:34.) Between different people the objects of thought are identical, the images are not. (65:37.) This should be considered in connection with Philippe's doctrine of social images mentioned above.

"When one thinks of a particular thing, he considers it also in a general way as a substrate of general relations, and the important thing is not the image but the bundle of relations." (65:38.) "The name is more than a mere sign of images, else different minds could not be united." (65:43.) "An image in itself is neither true nor false. The external world is neither an illusion nor a real existence. The idea that is engendered by the image is alone susceptible of truth or error. (65:47, 48.)

Ribot in his "Evolution of General Ideas" (1899) makes the image intermediate between the percept and the concept (51:5.) It is all a matter of gradual reduction to essentials.

"The percept," he says, "is pre-eminently a practical opera-

tion, . . . its mainspring is interest or utility, . . . in consequence we neglect . . . whatever at the moment concerns neither our desire nor our purposes." (54:4.)

In the image "the reduction of the object represented to a few fundamental features is still more marked." (51: 6.)

The genesis of the generic image depends on experience, on affective dispositions of the subject, on interest and on utility. (51:22.)

The concept is the image freed of all sense elements but still able to represent and carry meaning. The concept is reduced to a mere notion of value. (52:292.)

Ribot represents the progress of percept to concept by a diagram similar to the following, which is self-explanatory.

(Percept.]	Middle Threshold.	Generic Image.	Schematic Image.	Concept.
X	X	X	X	X

A. Binet in his "Pensée sans Images" (1903) acknowledges the difficulty of distinguishing between ideation and imagery (12:138); but concludes like Stout that "the image is only a small part of the complex phenomenon to which one gives the name of thought." (12:149.)

Binet makes this rather mistifying statement: "Consequently we can suppose that where images fail the thought is composed essentially of the internal language, it is a monologue." If this internal language is not sensory in character as Queyrat says, it is very hard to understand what it is.

In his "L'Etude Experimentale de l'Intelligence," Binet writes as follows: "we have determined that the work of thought is not sufficiently explained by the mechanism of the association of ideas: it is a mechanism more complex, which constantly suppose operations of choice, of direction. We have seen also that imagery is less rich than thought; the thought on the one side interprets the image, which is often unformed, indefinite; on the other hand the thought often contradicts the image, is often more complete than the image, and sometimes also is formed and developed *without the aid of any appreciable image.* These are some of its operations where the image cannot follow it. In generalization it is intention, that is to say in substance the direction of the thought which constitutes the 'general,' and not the image; the image may lend itself to generalization if it be indeterminate. Sometimes it does not lend itself to it, but for all that cannot prevent the flight of thought toward the general. In fine this is the fecund thought, fecund in philosophical consequences; all the logic of thought escapes imagery."

It will be seen that there are two opinions on this subject, which are diametrically opposed. Might not the solution of

the difficulty be found by studying the office in thought of the imagery of general sensation? Does not this correspond, in a measure at least, to the "direction of thought" which is made so much of by the champions of thought without imagery?

Part II. Imagination.

It would be impossible to mention here even the titles of all the books and articles that have been written on the imagination during the last twenty-five years. Neither would it be consonant with the purpose of this introduction, *i. e.*, to give an orientation into the field of psychological discussion on this topic. The vast number of literary, philosophical and pedagogical discussions must be passed over without notice; although many of these contain flashes of psychological insight, and will be cited occasionally in the empirical section of this study. Pathological studies have been included to a very limited extent, as in the first part of the introduction. This has been done for two reasons: first, the immense amount of literature in this field, much of doubtful value; second, the empirical part of this paper is a study in normal psychology, so that only representative pathological studies which bear directly on its results need be considered.

In the eighteenth century, Malebranche discussed the imagination and its physical substrate. He writes: "the agitation of the fibres (nerves) cannot be communicated to the brain without the soul perceiving something; if the agitation begins with the impressions which objects make on the exterior surface of the nerve fibres, and which are communicated to the brain, then the soul feels and judges that that which the soul senses is outside; that is to say it perceives an object as present. But if it is internal fibres which are slightly excited by the course of the animal spirits, or in some other manner, the soul imagines and judges that that which it imagines is not outside but within lhe brain, that is that it perceives an object as absent. This is the distinction between sensation and imagination. (4:38.)

Malebranche draws from pathology to show that they differ only in degree. He also distinguishes between two forms of the imagination, "the active imagination of the soul" and the "passive imagination of the body." (43:40.)

The retention of sensory impressions is thus spoken of: "So fibres of the brain having once received certain impressions, by the course of the animal spirits, and by the action of objects keep sufficiently long some facility to receive again these same impressions." (43:59.)

Malebranche also treats of sex differences. Women, he says, "cannot use their imaginations to resolve composite and

difficult questions. They consider only the outside of things, and their imagination has not sufficient force and extent to pierce the bottom, and to compare all the parts without being distracted." (43:67.)

Malebranche recognizes the rôle of the imagination in invention, discovery and the formation of the new systems (43:113), and treats of individual differences in the quality and power of the imagination.

The influence of Cartesianism upon the psychology of Malebranche is clearly shown. His anatomy and psychological concepts are of course antiquated; but one cannot but notice the similarity of method between his work and that of the modern French school.

So much to give an idea of the state of psychological opinion previous to the nineteenth century. It is true of the imagination proper, even more than of mental imagery, that little of scientific value was written concerning it until the last twenty-five years of the nineteenth century.

One cannot pass by Frohschammer's work, "Die Phantasie als Grundprincip des Weltprocesses" (1877), for two reasons: first, because, although it is philosophy and not psychology, it does give an idea of the ubiquity of the imaginative processes in the life of man, and second, because it must have given an impetus to the scientific study of the imagination.

Frohschammer discusses the imagination under three main heads: first, the subjective phantasy; second, the objective phantasy and its developments to the subjective phantasy in the nature process; and third, the development of the subjective phantasy, or, phantasy become subject to the self-conscious spirit, to human personality.

He writes: "One can indeed assert that the soul is inspired, limited, and determined principally by the subjective products of the power of imagination." (27:143.)

In 1877, Dilthey published an article on the imagination of the poet, occasioned by Grimm's "Goethe," then just published. The point of view may be obtained from his "die Einbildungskraft der Dichter, Bausteine zu einer Poetik" (1887), and his "Dichterische Einbildungskraft und Wahnsinn." (1886.) In the latter study he proceeds as a physician would to seek for symptoms of the alleged pathological state which is called poetic genius. He notices that "the poet has extraordinary energy and facility in mental processes, therefore, lively pleasure in them." (22:9.) Dilthey asserts that the poet "lives with his own creations as real persons, and feels their pains as real pains. He changes his own ego into that of his hero, feels, thinks and acts through them." (22:11.)

That which is common, says Dilthey, to the dreamer, the

hypnotic, the insane, as well as the artist and poet, is "a free formation of images and their composition unlimited by the conditions of reality." (22:12.) Here the similarity ends. The cause of the free formation of images is different in the case of the poet and artist from that in the case of pathological subjects.

The true differentium of the poet is the "exceptional energy of feeling, of emotion, which has as its result the free evolution of the image beyond the boundaries of the real." (22:13.) A genius so distinguished is not pathological, but the sound, the perfect man.

Dilthey discusses the growth and decay of the image. It is changed by the dropping out of constituent parts, and the entrance into its innermost core of new elements and compounds. Pictures are also changed by extension or shrinkage, according as the intensity of the sensation of which they are composed is increased or lessened. (22:24, 25.)

V. Egger, in his work previously quoted (1881), refers to the old classification of forms of the imagination between reproduction with innovation, involving two varieties, reproductions of sensations and reproductions of other states; and production pure and simple, also including two forms, reproduction of sensations and reproduction of other conscious states. (24:191.)

"It is better, however," he says, "in the classification of elementary psychic facts, to reserve the word imagination for facts which are new in some degree, and to characterize the memory by the absence of all innovation." (24:191.)

Unlike Philippe (49:1), he regards the memory as the substrate of the imagination. He writes: "Memory being the reproduction of the facts of experience, imagination is experimental innovation, but the foundation of all this innovating activity is the memory; if we suppose the imagination to be at its maximum and to penetrate the most profound depths of our mental phenomena, memory is an irreducible basis, more deeply placed still, and upon which is necessarily constructed the edifice of the imagination. (49:193.)

Meinong, in his "Phantasie-vorstellungen und Phantasie" (1889), defines Phantasie-vorstellungen as all those "Vorstellungen" with which the imagination busies itself, whether they be old or new. (44:236.)

He differentiates between the generative and the constructive imagination, and sees in the imagination nothing but the union of the generative and constructive dispositions of the mind. (44:239). "The value of . . . . separation," he states, "lies above all in this that both functions with regard to their appearance are not connected with one another, but in their

isolated occurrence are conceived as functions of the imagination." (44:239.)

Adam, in his discussion of the "Use of Imagination in Scientific Discovery according to Bacon" (1890), says that scientific investigation consists of two parts; first, the collection of facts (1:170), and, second, in extracting from the mass of observations and experiments some axiom or some law. This it is necessary to invent or imagine. Spencer was equally insistent on the place of the imagination in science, even, as is well known, defending the day-dream as propedeutic to purposeful imagination. In fact it is now a commonplace to say that the scientist must have imagination.

Queyrat in "L'Imagination et ses Variétés chez l' Enfant," as has been noted previously, insists that the type of mental imagery is a strong factor in determining the character of the imagination, in fact in determining the varieties of mind. (50:38.)

He distinguishes four varieties of individuals according to their habit of mental imagery: the normal or mean type (the equilibrated type of Lemaitre), the visual, the auditory and the motor. (50:40.)

The aim of Queyrat's book is pedagogical, so we find him discussing such topics as the different aptitudes of children, the danger of creating but one order of images, superiority of the normal type, and methods of assuring equilibration of imagery.

Burnham in his "Individual Differences in the Imagination of Children" distinguishes between the reproductive imagination, which merely reproduces *ideally* sense impressions, and the productive imagination, which combines impressions to make new wholes. (14:204.) He recognizes the same types of imagery as Queyrat, but adds the tactile. (14:211.)

Bain does not hardly consider imagination as a separate activity. What he has to say concerning it is under the head of constructive association. He declares that "the so-called power of imagination, which, in its peculiar sphere, rivals in amplitude the domain of the reason, would be bereft of all its force and character, but for the workings of similarity as developed in the rarest examples of its endowment." Speaking of such creations as those of mathematics and of the fine arts he writes: "the intellectual forces operating in these creations are no other than the associating forces already discussed. (6:606.)

Bain treats constructiveness under the following heads: mechanical constructiveness, verbal constructiveness, feelings of movement, constructiveness in the sensations, construction of new emotions, concreting the abstract, realizing representation or description, constructiveness in science, practical construct-

iveness, and fine art construction, which alone he dignifies with the name imagination.

The distinguishing characteristic of fine art construction is the presence of an emotional element in the combinations. (6:635.)

The construction of a building is not the work of the imagination, according to Bain, because no feeling or emotion enters in as an element, except the one feeling of answering a practical end. But may not this feeling be as intense as any other? Is not the pleasure of being a cause, enlarged upon by Groos (30:185), very potent? May not, as Ribot asserts, any feeling or emotion whatever conduce to imaginative activity?

Bain asserts that only when, beside the practical end the desire to gratify the æsthetic sensibilities is in evidence, does imagination enter into such construction. He notes, however, the effects of such emotions as fear, terror, anger, the egoistic feelings, etc., upon the imagination.

At the close of his discussion of constructiveness, Bain discusses the artist's regard for truth, and makes the characteristic statement that "we ought not to look to an artist to guide us to truth; it is enough for him that he does misguide us." (6:646.) Bain limits the imagination to those forms of constructiveness not concerned in the pursuit of truth.

Arréat, in his "Mémoire et Imagination" (1895), has drawn material from letters and biographies. He recognized that such material is apt to lead one into error, however careful he may be, and contents himself with making suggestions to be worked up later by others in the laboratory. (5: Introduc. VIII.)

He notices that in imaginative work the physiological tone is raised, and that positive pleasure accompanies execution. (5: 133.) Arréat makes the statement that "the specialization of our images corresponds to different modes in which the living being manifests itself; it has its origin in the relation of the subject to the object, of the physiological organism to the environment. Man is an instrument in tune with the diapason of things" (5:163).

Peculiarities of imagination are due to a definite constitution of the memory, to the system of images of affective (see Ribot) and sensory origin; to heredity and to temperament. (5:168.)

James in his "Principles" states that "fantasy, or imagination, are the names given to the faculty of reproducing copies of originals once felt. The imagination is called 'reproductive' when the copies are literal; 'productive,' when elements from different originals are recombined so as to make new wholes." And again: "the phenomena ordinarily ascribes to imagination —are those mental pictures of possible sensible experiences to

which the ordinary process of associative thought gives rise." (36:44,45.)

Where the details of the image are sufficiently concrete as to constitute a date, the image is a recollection (36:45.) As an opponent of the atomistic theory, James is bound to say that "an imagined object, however complex, is at one moment thought in one idea, which is aware of all its qualities together." (36:45.) James thinks that "the subjective difference between imagined and felt objects is less absolute than has been claimed, and that the cortical processes which underlie imagination and sensation are not quite as discrete as one at first is tempted to suppose. That peripheral sensory processes are ordinarily involved in imagination seems improbable; that they may be sometimes aroused from the cortex downward cannot, however, be dogmatically denied (36:72).

James states that "the difference between sensation and imagination is not in localization but rather in intensity. (36:72.)

Zahlfleisch, in his "Über Analogie und Phantasie," regards mathematics as the best example of what the imagination has done for science (67:160.) He cites the discovery of the properties of similar triangles by Thales of Miletus as an example (67:162, 163). The historical connection between imagination, as embodied in religion, and the mathematics is also pointed out. Thus Philolaus dedicated the corners of certain figures to certain gods, and Plato always made the gods go to work in a geometrical fashion. (67:168.)

In 1898, Dearborn made what claims to be a study of the reproductive imagination by means of ink blots. It is much more a study of association by similarity, which is of course basal to imagination, than a study of reproductive imagination. Dearborn's subjects were adults. The results were inconspicuous. About the only thing in the way of conclusion that the study contains is the rather trite statement that "experience and especially early experience of the subject, has important influence." (20:190.) Dearborn also observes that "the difference between the imagination of the country and city bred is clear."

Chase, in his paper on "The Imagination in Relation to Mental Disease" (1899), writes: "it may be said that there are always two streams in consciousness . . . of which one now prevails and then the other; one flows in the current of sensuous perception; and the other in that of representative consciousness, *i. e.*, in the current of memory and imagination. Between the two currents, the presentative and representative, and also between the two elements in the latter, memory and imagination, there is an inverse ratio. (18:286.) (*Cf.* Binet,

10:308.) Chase believes that the harmonious blending of these two opposite tendencies is requisite for the building up of a symmetrical character. (18:287.) That is, sanity is the result of proper blending of the presentative and representative processes. Like so many others, Chase notices the close connection between the imagination and the feelings. (18:292.)

"Studies in Imagination" (1900), by Lillian H. Chalmers, is based upon 282 returns, 70 from female teachers, 91 from female students, and 121 from male students. The study deals with literary tastes, dolls, number forms, etc. As to tastes, the female students show less difference between their childhood likes and their mature approvals. (16:115.) Miss Chalmers writes: "the answers show that our informants do not value the exercise of the imagination as highly from their adult standpoint as they experience in their childhood's reading." (16:117.) She finds that those who like and approve fanciful reading are generally those with a more literary taste, while the more practical people, that is those who like mathematics and the deeper studies, see less value and pleasure in fanciful reading, but like something real."

Ribot, having previously established to his own satisfaction the existence of an affective memory, in his "L'Imagination Créatrice Affective" (1902), proceeded to do the same for the affective imagination. In it he answers the question: "Is there a form of the creative imagination, which forming new relations, assembles and combines affective states of different kinds and nothing but them?" (53:598.)

Ribot presents two fundamentally opposed theories of music, viz.:—first, that music treats of sounds,—"c'est un chant intérieur non un sentiment intérieur, qui pousse le musicien à composer;" second, that emotion is the substance and raison d'etre of music.

Ribot does not think that the opposition between these theories is irreducible; they correspond rather to two distinct classes of music. The second, he says, is a manifestation of the affective creative imagination. He makes it the basis of his study.

The three conditions necessary for such creation are: first, the innate habit of living in the world of sound sensations; second, the spontaneous tendency to translate everything musically, and express exterior and interior events in the language of sounds, and . . . . to transform all into affective dispositions, into states felt, which are immediately incarnated and developed in a sonorous vestment" (53:605); third, the predominance of feeling states. (Sentiments.) (53:606.)

These last, to fully support Ribot's theory, should so pre-

dominate as to shut out plastic images. He finds them, however, with some people even in the case of music of the internal type. For himself there are suggested by music no such images. There is "complete confiscation of the consciousness for the profit of the affective life."

The primitive dance expresses emotions. It is their motor objectification and expansion under the condition of rhythm. (53:613.) It is the most elementary form of the affective creative imagination. (53:614.)

Among primitive peoples insufficient material (few notes) and technique prevent the development of affective imagination. Since the right conditions of material and technique have been evolved the chief problem is "to give to that which is by nature vague and fleeting relative precision and stability." (53:615.)

The affective imagination creates personages and develops characters "by creating, grouping, and putting in action 'êtres sonores' each one of which has its own life and expresses a state of the soul." (53:616.) It has two forms: one dependent, usually adapted to a dramatic work; the other free, disassociated from words and purely instrumental. The musician is in much better case than the literary symbolist, who faces the task of translating affective states into words. (53:620.) Symbolism must remain an incomplete type of the affective imagination.

To the mystics Ribot denies affective creative imagination save in the case of "romans d'amour," mostly produced by the female sex. (56:625.) Among the greater parts of the mystics there is an exaltation of the memory rather than of the imagination. (53:624.) The "romans d'amour mystiques" are, however, impure examples of the affective imagination.

Ribot explains the neglect of the affective imagination ni the past by psychologists by three facts:

1. The creative imagination has been studied too long as a complex faculty. In fact, the term affective imagination is only an abstraction. There is no imagination in general. There are men who imagine. There are several types to which men conform, of one of which, the diffluent, characterized by the vague contours of images, the affective imagination is a species.

2. The insufficiency of our knowledge of the psychology of the feelings.

3. The power of creating has shown itself first clearly in forms using plastic images, *i. e.*, visual, tactile and motor. (53 : 629, 630.)

Meyer prefaces his "Das Wesen der Einbildungskraft" by a discussion of views of the imagination in philosophy. He dis-

tinguishes two views: one holding this power to be the most original faculty of the soul which unites mind and body; the other denying to this power its originality and declaring that that which is called the power of the imagination is a compound product of other primal psychic forces. (45:26.)

He shows that the idea that the image is the cause of motion led to the idea that the image might cause the growth of vegetation. The philosophy of Hartmann is a sort of somnambulistic ideation. But if the way the soul of the artist works is the way the soul of Nature works, then Nature's work is half conscious. That the artist works unconsciously is only half true. Imagination is the mid-station in the soul of the artist between the conscious and the unconscious. So the philosophical theories which introduce the image to explain world processes are transition philosophies attempting to bridge the gulf between materialism and idealism.

Leaving philosophy, Meyer says that the memory, the elementary form of the imagination, is nothing else than the holding fast of inner pictures of sense perceptions. (45:37.) Our soul has, beside, the capacity from the memory elements by the processes of analysis and synthesis to produce new images. The memory is reproductive, the imagination is productive. (45:38.)

The generic image is a schematic image developed from the images of many individuals (*cf.* Galton), and is not a mere reproduction, since it involves something that one has never seen. (45:38.) It is a new "structure of analytic thought, and the beginning of thought proper." (45:39.)

There are involuntary image associations producing really new single forms. "Related elements from different memory impressions associate to form new compound images, which our soul never saw." (45:39.)

The mixture of the free play of association and of thought and will controlling the attention, produce from the memory the new psychic power which we call the power of the imagination or phantasy. (45:40.)

Dugas, in his "L'Imagination" (1903), considers imagination as mental and motor suggestion, as the principle of faith and action. It may be related to the will of which it is the initial form. The tendency of the image to produce belief or motion is a favorite thesis of the French school.

Dugas says that "the imagination is not sufficiently characterized by the nature, origin, or special character of its representations: it should not be considered as the 'ensemble' of representations, or mental imagery. It is further and above all the art, spontaneous and reflective, of forming mental syntheses or combinations, what Bain calls by the word construct-

iveness." (24: Introduc. 2.) Its two essential qualities are originality and power. (24 : 3.)

His final definition is this: "The imagination is . . . the concourse . . . of two distinct qualities, the power of objectification and the force of combination. (24 : 4.)

Binet's "L'Étude Experimentale de l'Intelligence" (1903), although not ostensibly a study of the imagination, deals so largely with this topic that it must be mentioned here. It is an intensive study of twenty persons, among whom both sexes and young and adult are represented. Among the eight chief topics considered, five touch on the imagination either directly or indirectly. Binet conducted experiments on ideation made with words and with phrases, on the measure of the memory, on the opposition between the interior and the exterior life, and as to the rôle of the image in thought, on thought without image, and on abstract thought and its images.

The most valuable part of the study is that part which deals with experiments upon and the introspection of two sisters one aged fourteen and a half and the other thirteen. The obvious criticism on the study is that too great dependence is placed upon the introspection of such young and inexperienced subjects.

Binet says that "the creations of the imagination resemble memory in that they are detailed and precise, and they resemble abstractions in that they do not correspond to any fact or external object, which has been previously perceived. On the other hand one may say that imaginations are not memories because they are false, and are not abstractions because they are detailed." (10:41.)

He gets the following results expressed in mathematical form from experiments on the two sisters:

	Marguerite.	Armande.
Coefficient of Observation, ...	37·5	10
" Self-consciousness, . . .	4.6	28
" Memory, ...	53·7	29·3
" Abstraction, ...	3·7	23·3
" Imagination, ...	.0	7.6

The interpretation of this table is best given in Binet's own words. "We find in the case of one of our subjects precision of thought, ability to render account, constancy of attention, the practical spirit, mediocre development of the voluntary imagination, and above all the attention directed to the external world. Is this 'ensemble' of qualities not opposed in curious contrast to that other mind with whom the spirit of external observation less developed, a thought less precise, less methodical, less

conscientious, an attention less sustained, is allied to a development of the imagination in a sense poetic, vivacious, unlooked for and capricious?" (10:308.) Binet seems to think that there may be some necessary connection of the qualities in each group. (*Cf.* Chase.)

Ribot's "Essay on the Creative Imagination" (1906), while a very suggestive work is not and does not claim to be of great scientific value in itself. Some of the main contentions of the author, however, must be noted.

Ribot proposes to extend the formula "the representation of a movement is a movement begun," and show that it explains, in a large measure at least, the origin of the creative imagination (52:3). He believes that all representations contain motor elements since they are the remnants of past perception. It is the motor element of the image which tends to cause it to lose its purely inner character, to objectify itself. (51:5.) Ribot also posits "the existence, beside images, of another factor, instinctive in form, . . . which will lead us to the ultimate source of the creative imagination."

There are two chief forms of imagination; the purely representative power, and *the power of creation by means of the intermediation of images.* Imagination proper, in the intellectual order, is the equivalent of will in the realm of movements. Ribot distinguishes between the reason and the imagination by saying that imagination is subjective and personal, its movement being from within outward, while the understanding is objective, impersonal, and receives from outside. (52:10.) Just as imagination and will are analogous, so revery is the equivalent of weak desire. (52:10.)

Imagination is a tertiary formation and is, therefore, complex. Ribot discusses its four chief factors; the intellectual, the emotional, the unconscious, and the synthetic.

The image is, of course, the intellectual element. As to the emotional factor he says that it is the ferment without which no creation is possible," and again, "all forms of creative imagination involve elements of feeling." (52:32.)

While Oelzelt-Newin limits the action of the emotions on the imagination to the sthenic type, Ribot thinks that all emotional dispositions whatever may influence the creative imagination. (52:33.)

Self-feeling, or the pleasure of exerting one's power, leads to the motor elements, which are the fundamental condition of invention.

The interesting parts of experience revive best, and by interesting is meant, what *affects us in some way under a pleasing or painful form.* (52:36.) Emotional resemblance reunites and links disparate images. (52:37.)

Ribot insists on the necessity of mental forms, knowledge, for continuous invention. (52:163, 173.) Images are the raw materials of invention.

He treats of the plastic imagination; diffluent imagination in general, having vague images; the rational imagination, dealing with schemas or only slightly concrete images; affective imagination; mystic imagination, etc.

He thinks that, mathematics aside, all forms of invention have three moments, *i. e.*, observation, conjecture, verification. The second depends on the creative imagination, the third on rational operations. (52:239.) Reason is preventive, imagination is inventive. The latter "provides the rational faculties with their materials, their position, and even the solution of their problem."

Scientific imagination arises from the need of a partial explanation; metaphysics from the need of a total explanation. Metaphysics is rationalized myth. (52:251.) There is no creative instinct in general. *All invention arises from particular needs* (52:270), from the emotional nature of the inventor. (52:290.)

In his "Volkerpsychologie" (1905) Wundt has an excellent discussion of the imagination. He contrasts the old view of the faculty psychology of Wolff, which made imagination the basis of memory, with the modern view which distinguishes between changed and unchanged reproduction, and makes the latter basal.

He discusses the ostensible properties of the imagination, *i. e.*, "Anschaulichkeit," "Productivität," and "Spontaneität," none of which does he consider to be true distinctive marks. (66:8-13.)

The active phantasy is only a modification of the passive phantasy through complication with will functions.

Wundt holds that the elementary functions of the phantasy is an experimental problem, and therefore proceeds to the experimental analysis of "Phantasievorstellungen." He studies first space imagination through the medium of pseudoptic illusions and illusions of memory associations. Then he proceeds to time imagination. He finds feeling elements as constituent parts both of space and time imagery.

The true nature of phantasy rests upon two principles, which are, enlivening apperception and the feeling-heightening power of illusion. By the former he means the power of an observer to project himself into the object so that he feels himself one with it. (66:62-63.)

Wundt treats the imagination of children under the headings, imagination and play, the poetic imagination of the child (Erzählung und Märchendichtung), free fancy and child art.

Play and fancy are products of the child's voluntary activity. "Märchen" are food for the imagination introduced from the outside. Play is bound to some definite object; free fancy is not. (64:74, 75.)

He treats the imagination of the childhood of the race under the general topics of myths and religion.

L. William Stern and others, in "Beiträge zur Psychologie der Aussage," give the results of a large number of carefully conducted experiments on memory and evidence. These studies show very clearly that memory and reproductive imagination shade very gradually into the productive imagination, and while being ostensibly studies in memory, throw many side lights on the problems of the imagination. (68.)

In addition to the literature which deals avowedly with the imagination, there has been written a great deal, especially in the field of child and adolescent psychology, which contains much of value to the student of the imagination. Such are Preyer's "The Mind of the Child," Hall's "Adolescence," Chamberlain's "The Child," Groos' "The Play of Man," the child study publications of G. Stanley Hall, and Miss T. L. Smith, Jewell's "Psychology of Dreams," Lobsien's "Kind und Kunst," Sully's "Studies of Childhood." Most of these and others will be freely quoted in the empirical part of this study, so that further mention will be unnecessary here.

The chief points to be noted in this section are these:

I. There has been a gradual extension of the field of the imagination. At first it was limited practically to what we should now call the artistic imagination. Now it is recognized that the imagination holds sway in mathematics, science, and invention in all its forms.

II. The conception of the imagination as a sort of psychic entity, faculty, or even metaphysical principle has given place to the view that the word imagination is a convenient term to express those processes by which the soul (using this term of course in the psychological sense) working through the medium of images by individual acts seeks to satisfy its individual needs. There is no imagination, save as a convenient abstraction,—there are imaginations.

III. The imaginative processes are interrelated with the affective processes. Imagination is always accompanied by a very distinct affective tone, and affective dispositions control largely the character of the imaginings.

B. Empirical Study in the Imagination of Youth.

I. Definition, delimitation of the subject, and statement of methods.

For the sake of clearness it will be necessary to define the

meaning of imagination *as used in the empirical study which follows.*

The fundamental distinction between imagination and memory is this, that memory comes with such concrete relations as to constitute a date or place of occurrence, or at least to make the subject certain of the existence of some date or place in connection with the experience. This is a modification of the statement of James.

The distinction between imagination and reason lies in their aims. Imagination seeks to discover new uses and meanings. Reason seeks to establish the truth or consistency with reality of these uses and meanings. Use and meaning are respectively the subjective and objective sides of the same fact. A thing's use constitutes its meaning *for us.* A word's meaning determines its use. All manifestations of the folk imagination as myth and religion have aimed at meaning. All manifestations of personal imagination aim at the discovery of meaning, or its objective aspect, use. Imagination springs from those intellectual, emotional, or physical needs, which may be subsumed under the terms use and meaning.

There can be no sharp line drawn between the reason and imagination. Both use images, the first, perhaps, faint or schematic; the second, more distinct and particular. Indeed, reason itself springs from a need, *but a particular need*, the intellectual need of internal or external consistency. Hence the imagination reaches flower first, the need from which reason springs developing late.

As to the distinction between fancy and the imagination, it seems to be chiefly one of degree. Fancy corresponds rather to association by resemblance, imagination to association by similarity, that is by a greater degree of resemblance,—essential resemblance. Introspection will show that the difference is not one of complication with voluntary processes. Neither can quantum of emotion or feeling be used as a test of differentiation.

Various writers have distinguished two forms of imagination; reproductive and productive (Spencer, etc.), generative and constructive (Meinong, Oelzelt-Newin), passive and active (Wundt), representative and creative (Ribot). These are, of course, not exactly equivalent terms, but may be regarded as sufficiently so for the purposes of this study. Where necessary the terms productive and reproductive will be used. When not otherwise specified, the word imagination will mean productive imagination. The chief distinction between the two forms is the element of novelty; novelty in the grouping of image elements. This has been used as the sole test in the following study.

That no absolute line of demarcation can be drawn between the two forms is evident. Instead of considering memory, reproductive imagination, and productive imagination as successive stages of elaboration, it seems preferable to consider the image as the substrate of all three. By image is not here meant a psychic atom or cell (Philippe), in the strict sense of the word, but a relatively stable process. Imagination would then be a process of processes.

Heretofore, imagination has been left largely to arm-chair discussions, often fine examples of what they are supposed to study. Most scientific studies have been in the field of reproductive imagination. In imagination proper most of the work has been done in the field of æsthetics or pathology.

It seems to the writer that the time has not yet come to make a purely analytical study of the imagination or even to undertake monographs in different fields of the general subject, as propedeutic to a general discussion. To be of great value, monographs must be based on something approaching a scientific classification. This, as Ribot says, we do not possess. Before it can be obtained a vast amount of descriptive work will be necessary. This study aims to describe in a concrete way the imaginative processes in a number of normal youths ranging in age between thirteen and twenty. The imaginative processes will be considered in their psychic setting, in relation to the other mental processes.

The subjects of this study were nineteen boys ranging in age from thirteen to twenty, and twenty-one girls with the same range of ages. The average age was practically the same for both sexes. Among the subjects were no children without brothers and sisters. The smallest family represented had two children and the largest ten. The average number was about five. There were only two orphans,—sisters, who, however, lived with their uncle and aunt and were surrounded by normal home influences.

All were submitted to the following series of tests:

1. Tests of interests and preferences by means of questions addressed to the subjects individually.
2. Tests of interests by favorite books.
3. Test of interest by titles of stories.
4. Tests of interest by favorite poems.
5. Tests of memory.
6. Tests for types of mental imagery.
7. Test of imagination by a series of stories the subjects of which were chosen by the pupils.
8. Test of imagination by a series of stories suggested by pictures presented to the pupils.

II. Tests and the Consideration and Analysis of Results.

1. Test of interest by means of questions.

The following questions were given orally to each subject and the answers, where definite, noted down. These were revised throughout a period of six months by repeated questioning and answers.

a. What is your favorite study?

b. Have you been advanced each year in school?

c. If not, at what age did you fail?

d. When endeavoring to recall a scene or to imagine an historical event, how far are you conscious of your surroundings?

e. Have you ever had day-dreams?

f. If so, what about?

g. Have you ever written verse?

h. If so, at what age?

i. Do you ever imagine you hear a voice calling you, and find afterward that you are mistaken?

j. Did you ever play with an imaginary companion?

k. If so, at what age?

l. Can you remember anything about these imaginery companions?

m. At what season is your imagination most active?

n. Do music, pastoral scenery, twilight, darkness or works of art affect your imagination?

o. When you were between the ages of six and twelve were you fond of fairy stories?

p. Are you still?

q. Did you then prefer fiction to history?

r. Do you now?

s. Do you prefer a true story to one equally good but not true?

a. From this question the following general results were obtained:

Favorite Subjects.	Number of boys choosing them.
Geography	5
Mathematics	5
History	3
Physiology and Hygiene	1
History and Geography	2
History and English Literature	1
Physiology and Hygiene, and Mathematics	1
History, Physiology and Hygiene, and Mathematics	1

Fourteen boys chose one definite subject as their favorite, while five were unable to do so.

Favorite Subjects.	Number of girls choosing them.
Mathematics	5
History	1
Geography, Music and Mathematics	1
History, Reading, Mathematics, Spelling, and Latin	1
History, Geography, Grammar and Mathematics	1
History, English Literature and Mathematics	1
Mathematics and Geography	1
Mathematics, History and Geography	1
Mathematics, Grammar, Physiology and Hygiene	1
Mathematics, History, and English Literature	1
Mathematics, Geography and History	1
Music and Spelling	1
Music and Drawing	1
Music and English Literature	3

Six girls chose one definite subject as their favorite. Fifteen are unable to do so. One of these had no preference whatever, and so is not included in the above table.

These tables show some very marked sex differences for these particular subjects. The first is the much greater specialization of the boys in interests. This will be noted in succeeding tests and need not be commented on further here.

Another point is this, that while each sex choose mathematics five times as *the* favorite, twelve girls to seven boys mention it as *a* favorite. No doubt here as elsewhere the answers were influenced by the marks made in the different subjects, although all were warned not to allow this. It is comparatively easy to make large marks in elementary school mathematics if one has sufficient application. This quality was where the boys were most lacking. The best mathematicians were boys, while the girls had a much higher average of proficiency.

Each sex choose history six times, but the boys make three exclusive choices, the girls but one of this subject.

The boys choose geography six times, the girls five times; but no girl makes it her sole favorite, while five boys do.

The comparison of the sexes in history and geography is especially instructive, when taken in connection with the results of succeeding tests, which bring out the superior motor mindedness of the boys, their love of action and hazardous adventure.

Three of the girls have a preference for English Literature to one of the boys; while four of the girls to none of the boys prefer music to some degree. One of the girls and none of the

boys choose drawing. All this would seem to indicate greater artistic sensibility among the girls.

b. and c. Answers to these questions give the following results.

Of the boys eleven were advanced in grade each year. Four failed at thirteen, three at twelve and one at ten. The average age of failure was 12.25.

Of the girls fifteen were advanced in age continuously. Four failed at twelve, one at ten, and one at eight. The average age of failure was eleven.

These results cannot, of course, be of an application any wider than the particular individuals that furnish them. They do, however, suggest the period of prepubertal retardation and stupidity noticed by so many. It will be noticed that the average for the boys exceeds that for the girls by a year and a quarter. This is somewhere near the difference one would expect on the supposition that failure to be advanced depended on developmental changes.

d. Six boys state that, while trying to recall a scene or imagine an historical event, they are entirely oblivious of their surroundings. Three are dimly conscious of surroundings, but say that they are undisturbed by them. Three say that they are bothered by their surroundings. Two say they are disturbed by noises and one by sights. Two say that they are entirely unable to concentrate, if there is any strange stimulus whatever in their environment.

Of the girls only one is able to entirely ignore her surroundings. Three, while conscious of environment, are undisturbed by it. Four say that they can forget their surroundings when the subject of thought is very interesting. Seven are hindered greatly in concentration by factors in the environment. Three say that concentration is impossible where there is a noise of any kind. Three are unable to tell whether they are affected by their surroundings or not.

These boys are evidently superior in capacity of giving attention to the girls. As a matter of fact they did not in practice attend any better, on the whole, but in cases of emergency or where there was great interest they certainly surpassed the girls. This corresponds with the fact that the boys have fewer but deeper interests than the girls. If attention be fundamentally motor, may not the superior motor training of the boys offer a partial explanation?

e. Fifteen boys say they have had day-dreams. In general it may be said that they dream of the present or immediate future and rarely of the past. Hunting, fishing and work are prominent in the subjects mentioned. Only one dreams of his future calling.

Nineteen girls say they have day-dreams. Ten say they dream of the future, five of future profession. One mentions adventure and another travel.

f, g and h. Seven boys plead guilty to having written poetry. Two wrote at about twelve years of age and one at thirteen. One began at fourteen and has done so continuously up to the present. Two say they write poetry right along. One does not remember when he passed through the poet stage.

Nearly all the boys' poems are lampoons or are of an otherwise alleged humorous nature. The following is characteristic:

THE COLONEL.

Who wears brown bloomers
The cheapest that can be bought,
Cheaper than he could import?
The Colonel.

Yass (the Colonel's father) says his things are extra fine,
From the turnip patch to the cucumber vine,
But one is extra, please bear in mind,—
That's the Colonel.

Who comes around when school is out,
Knocks at your door and gives a shout,
And tries to run, but is too stout?
The Colonel.

Who tries at school his geometry to shirk,
Because only one side of him will work,
And looks like a Sir David Kirk?
The Colonel.

One of the boys wrote poetry of an avowedly serious nature.

Five girls only admit having written poetry, and two of these say it only happened once or twice. One wrote at thirteen and two at fourteen. One, now twenty years of age, has destroyed all her poetry. Two of the girls wrote poetry, of a serious nature; the rest wrote poetry of a humorous or libelous turn.

i. Fifteen boys have had auditory hallucinations, while only ten girls have any recollection of such experiences.

It is certain that the hearing of imaginary voices has little or no connection with the habitual type of mental imagery. For example, the girls are somewhat more auditory than the boys. Again, all but one of the four boys who have not had auditory hallucinations have more or less definite auditory images. Of the eleven girls who have not had auditory hallucinations, two only appear to be deficient in auditory imagery, while with two of them auditory imagery predominates.

The apparent sex difference may very probably be due to a greater number of transgressions and a consequently more evil conscience on the part of the boys. At any rate it is the father's or mother's voice in tones of reproof that is most frequently heard.

j. k. and l. Five of the boys and six of the girls remember having had imaginary companions. The results as to age are unsatisfactory. One of the boys remembers having had the same companion for several years. Another imagined a different one for each day. The details are very meagre.

There seems to be a general correspondence between the results of this question and of the story test, in that on the whole those who have had imaginary companions have been above the average in the imaginative quality of their stories. At the same time, it should be said, that the most highly imaginative of the boys does not remember having had an imaginary companion.

m. Six boys state that their imagination is most active in the spring; one, in spring and summer; six, in summer; one, at Christmas time. To six the season is indifferent.

Of the girls, ten say that their imaginations are most active in the spring; one, in spring and summer; two, in winter; one, in winter with an open fire; to seven the season is indifferent. One of the last class says her imagination is like Vesuvius,—liable to break out at any time.

Spring and summer greatly preponderate over the other seasons for both sexes. Spring and summer are on a parity with the boys, while spring is much more favorable to the imagination in the case of the girls. These are the seasons when great physical activity is possible, or rather most easy. The boys, however, have some outlet for their activity in the winter, so that there is not so great a vernal outburst; while the girls, more confined indoors during the winter months, rejoice in the freedom of movement which spring brings, and, as a result of the changed affective tone and of possibility for motor expression, there results an outburst of imaginative activity. The heat of summer boys have ways of overcoming. They still find action possible and pleasurable, and imagination does not flag. With the girls different conditions bring about different results.

There is a possibility that the different physiological ages of the boys and girls may have something to do with the difference here. More of the girls have reached the age of puberty and more, therefore, will be affected by the universal awakening of spring. Among the boys spring is mentioned more often by the older boys.

n. Three boys state that their imagination is quickened

by music, pastoral scenery, twilight, darkness, and works of art; two by twilight and music; one by twilight and works of art; one by twilight and darkness; two by darkness and pastoral scenery; one by music; one by music, pastoral scenery, and works of art; one by works of art; one by music and pastoral scenery. Four say they are not affected by any of these agencies.

Of the girls, eight are affected by all of the agencies mentioned above; one by music; one by music, pastoral scenery and art; one by music, twilight and darkness; two by music, pastoral scenery and twilight; one by pastoral scenery; one by darkness and twilight; one by darkness and pastoral scenery. Five are unaffected by any of these agencies.

It will be seen that about 75% of both sexes and of the total number are affected by one or more of these influences, but that the proportion of girls *affected by all or nearly all* is much greater than with the boys. This is in line with the results of other tests, which show a greater spread of interest among the girls, and a greater specialization among the boys.

It is only a commonplace to state that music, pastoral scenery, works of art, twilight and darkness, strongly affect the emotional life. Is it not through the feelings and emotions that they influence the imagination?

o. and p. Thirteen of the boys state that, when they were between the ages of six and twelve, they were fond of fairy stories. Of these ten say that they still are. The older pupils have their full proportion in this class.

The results with the girls were identical. Fairy stories seem to have a perennial interest, and with respect to them there seems to be no appreciable sex difference. The liking for fairy stories seems to have no relation to imaginative activity.

Miss Chalmers found 24% of her female teachers, 48% of her female students, and 23% of her male students put fairy stories first in their youthful reading. This would seem to show some sex difference. It will be noticed that there is not much difference between the statements of the female teachers and the male students. (16.)

Lobsien found that almost 40% more girls than boys preferred fairy stories. These were, however, younger than the subjects of this study. Lobsien's figures indicate that the sexes approximate in this respect as they get older. (41:52.)

q, r, and s. Five boys say that at the period between the ages of six and twelve they preferred fiction to history. All of these still do. Four say that they preferred history and still do; but one of these said he did so because a novel was too long and had to be read at once, while a history could be read

in sections. One formerly preferred history but now prefers fiction.

Two have always preferred the history of their own country, but fiction of foreign lands. One prefers the exact opposite. One chooses fiction "with a touch of history." Three prefer the historical novel.

Ten boys prefer a true story, yet four of these say that they prefer fiction to history. This apparent contradiction is due to the dullness of the school history and its lack of well told narratives, combined with the fact that they are compelled to learn it. Many of the boys were very eager to get hold of the histories loaned by the teacher outside of the regular course.

Three boys say they prefer an untrue story to one equally good but true. Six state no preference.

Of the girls ten unequivocally preferred fiction to history. Of these eight still prefer it. The taste of one changed when she was about twelve years of age. Three others preferred fiction concerning foreign lands, but history of their own country. One prefers the history of great men or the historical novel. Two prefer the historical novel. One does not like either fiction or history. Four express no preference.

Of the girls twelve prefer true stories. Of these seven prefer fiction to history, probably for the reason mentioned above. One prefers a true story in case of an adventure. One prefers a story "half and half." One prefers a true story in most cases. One chooses the true story unless some one is represented as being in danger. Another says she prefers the story to be untrue if it is sad, as then she doesn't feel so badly. These last two statements tally with the results of other tests which show a predominance of emotional interests with girls.

Two girls choose the untrue story. Two express no preference.

It will be seen that no marked sex differences appear. The preference for the historical novel, or mixed fact and fiction, is quite prominent. Perhaps the psychological basis for this is the same as that sometimes given for wit,—a feeling of contrast brought about by the sharp juxtaposition of the real and the unreal. Or it may be a compromise between our passion for the true and real and our desire to get away occasionally from the workaday world.

The school history used by these pupils, one about like the average of historical text-books, is evidently condemned.

The choice by five of the subjects of the history of their own country but fiction concerning foreign lands is evidently based on a notion of relative values and indicates the influence of the moral judgment. Perhaps there is a moral element in the case of the girls who wish to avoid true stories which involve pain or suffering.

BOYS.

No.	FIRST CHOICE.	SECOND CHOICE.	THIRD CHOICE.
1	Buffalo Bill	Young Wild West	Robinson Crusoe
2	———	———	———
3	The Young Midshipman	The Fire at the Farm	Robinson Crusoe
4	Indian Chief	That Scholarship Boy	Fast in the Ice
5	The Stolen Bracelet	Kidnapped	Uncle Tom's Cabin
6	Treasure Island	An Inland Voyage	The Young Midshipman
7	Buffalo Bill	Try Again	Among the Malay
8	Evangeline	The Boy Knight	The Young Virginian
9	By Conduct and Courage	The Man from Glengarry	Frank Merriweather's Prosperity
10	Treasure Island	Joe's Luck	Life of Buffalo Bill
11	The Man from Glengarry	The Return of Sherlock Holmes	The Young Midshipman
12	Among Malay Pirates	Hi, Lo, Jack	The Jay from Maine
13	The Prospector	Mr. Midshipman Easy	Captain Eri
14	The Blazed Trail	Captain Eri	Mr. Midshipman Easy
15	The Prospector	Allen Quartermain	Mr. Midshipman Easy
16	The Indian Horror	What can a Woman do?	Robinson Crusoe
17	Man from Glengarry	Thelma	Silence of Dean Maitland
18	Ivanhoe	The Hound of the Baskervilles	The White Company
19	The Wild West	The Bradys	Buffalo Bill

GIRLS.

No.	FIRST CHOICE.	SECOND CHOICE.	THIRD CHOICE.
1	Beautiful Joe	The Lamplighter	Ishmael
2	Ten Nights in a Bar-Room	Settlers in Canada	Gold Hunters of Alaska
3	The Wide, Wide World	———	———
4	Ishmael	Thelma	Berenice
5	Poor and Proud	Thorn and Orange Blossoms	Stepping Heaven Way
6	Wild Kitty	Mildred at Home	Jack Ward at Weston
7	With Clive in India	Ruyub the Juggler	Little Men
8	The Lamplighter	John Halifax, Gentleman	Ishmael
9	At the Mercy of Tiberius	Refugees	No Place Like Home
10	The Wide, Wide World	Oliver Twist	The Storm Children
11	St. Elmo	At the Mercy of Tiberius	Les Miserables
12	Ishmael	Black Beauty	Dora Thorne
13	Lena Rivers	Half the Truth	Elaine Delaine
14	Little Wives and Little Women	A Girl in a Thousand	Thorns and Orange Blossoms
15	Little Wives and Little Women	Wide, Wide World	Black Beauty
16	Esther Reid	Esther Reid Yet Speaking	Black Rock
17	Children of the Abbey	Lord Lynne's Choice	His Heart's Queen
18	In His Steps	Uncle Tom's Cabin	Only the Governess
19	Thelma	Out on the Pampas	Dora Deane
20	The Lost Heir	Little Women and Little Wives	Among the Malay Pirates
21	Gentle and Brave	Uncle Tom's Cabin	Three Nights in a Bar-room

In neither sex does there seem to be any relation between a preference for fiction and the possession of imaginative power.

2. Test of Interest by Favorite Authors.

The results of this test are best presented in tabular form. Each subject was required to write down three favorite books in the order of preference. (See pp. 173-174.)

The following table presents comparatively the choice of authors, as gathered from the above lists of books.

Authors.	Number of times chosen by boys.	Number of times chosen by girls.
Stevenson,	4	0
Stewart Edward White,	1	0
H. D. Northrop,	1	0
Sir Walter Scott,	1	0
Brady,	2	0
J. C. Lincoln,	2	0
H. Rider Haggard,	1	0
DeFoe,	2	0
Burt L. Standish,	1	0
Grey,	1	0
Longfellow,	1	0
Mrs. M. L. Rayne,	1	0
Emma Leslie,	1	0
G. A. Henty,	9	5
Marryat,	3	1
Ralph Connor,	5	1
Conan Doyle,	3	1
Mrs. H. B. Stowe,	1	2
Marie Corelli,	1	2
Laura Saunders,	0	1
Mrs. E. D. E. N. Southworth,	0	4
Maria Cummings,	0	2
A. J. Evans Wilson	0	2
Elizabeth Wetherell	0	3
Mary Holmes,	0	2
Louisa M. Alcott,	0	4
Pansy,	0	2
Martha Finley,	0	1
Mulock,	0	1
Anna Sewell,	0	2
Antoinette Graham,	0	1
C. M. Breame,	0	1
Rosa N. Cary,	0	1
Mrs. Georgie Sheldon,	0	1
Bertha Cobb,	0	1

Authors.	Number of times chosen by boys.	Number of times chosen by girls.
Thesba Stretton,	0	1
R. M. Roche,	0	1
Meade,	0	1
Sheldon,	0	1
Sylvanus Cobb,	0	1
Victor Hugo,	0	1
Charles Garvice,	0	1
Charles Dickens.	0	1

The contrast between the two lists of favorite books is very evident, especially between the columns of first favorites.

With but few exceptions the books chosen by the boys deal with physical activities of various sorts. Religion, love, home-life, are practically ignored. Courage and daring are almost the only moral qualities which appeal to the boys. The emotions concerned are those connected with quick and daring action.

The girls, on the other hand, choose books which appeal to the emotions, especially the sombre emotions, as pity; to the social, religious, and moral interests. On the whole, the boys' list appeals to one as more wholesome.

In the girls' list ten male authors are represented: Henty having five books, the others one each. In the boys' list are found but four female authors, with one book each. The girls' list contains 29 authors; the boys 19. In both respects the boys' tastes are less catholic, or rather, perhaps, more specialized.

Lobsien, in his "Kind und Kunst," obtains similar results. He had his subjects write down the names of the books they had read and also the names of their favorite books. In both lists he finds that the girls surpass the boys considerably in the number of books. (44:61.)

He showed his subjects a picture of a boy with a bird and its young ones. The girls were *touched* because the boy does not harm the bird, because he looks so *pitifully*, because the mother bird begs so hard for its poor young ones, because they *are not able to see the anxiety of the mother bird*. The boys are rather enthusiastic because the little bird has *courage*, that it defends the little ones from the big boy, that it does not fly away, that it dares to abuse the enemy. (41:85.)

In the same picture the girls see a bird begging; and the boys, a bird abusing. The difference is evidently one of habitual apperception, based probably on the fundamental emotional life.

The following is his list of favorite books, leaving out those which received only one or two choices and do not seem sig-

nificant. The figures for the different grades will be left out except where they seem specially significant. The figures for the girls are to be found on the right; for the boys on the left.

	I	II	III	IV	V	Summe	I	II	III	IV	V	Summe
Robinson						20						28
Indiangeschichte	16	11	7	3	2	29						0
Realienbuch						15						0
Bibel						4						12
Märchenbuch	3	13	18	25	22	81	12	17	33	28	28	118
Sagen						4						0
Burenkrieg						3						0
Seeabenteur						4						0

The German children are younger than the children or rather youths of this study, so we cannot expect to find exact correspondence. It will be noticed that Robinson Crusoe is a greater favorite with the former. It might seem surprising that the girls here surpass the boys. The liking is, however, probably based on different interests, the boys probably on love of adventure and travel to distant countries, the girls, perhaps, to their pity for one left alone. It will be seen that this is a strong feminine trait. "Seeabenteur," it will be noted, appeals to four boys, but none of the girls.

The love of the "Märchenbuch" is stronger with the girls than the boys and decreases much faster with age in the case of the latter. Is interest in the occult, mysterious, the differentiating factor?

The love of "Indiangeschichte" increases as preference for "Märchen" decreases with the boys. The girls show no liking for "Indiangeschichte." It is the same with "Sagen," "Burenkrieg," and "Seeabenteur."

Three times as many girls as boys prefer the Bible.

In general it will be seen that the interests of the boys are predominantly motor, and strenuously so. The love of "Realienbuch" would also seem to be characteristic. (41 : 52.)

Lillian H. Chalmers, in her question as to the favorite literature in childhood, got the following results, leaving out non-essentials. (16.)

Female Teachers.		Female Students.		Male Students.	
Favorite Subjects	%	Favorite Subjects	%	Favorite Subjects	%
Natural Stories	42	Fairy Stories	48	Adventure Stories	40
Fairy Stories	24	Natural Stories	36	Fairy Stories	23
Adventure Stories	13	Poetry	5	Natural Stories	12

Titles of Stories Selected by the Boys.

Subjects.	No.	First Story.	Second Story.	Third Story.	Totals
	1	Driven from Home	Mining in Colorado	A Runaway	
	2	A Wreck at Sea	A Hunt	A Boat Sail [Afloat	
	3	The Shipwreck	When Tom was at War	The Man that was sent	
	4	A Perilous Adventure	A Narrow Escape	The Burning House	
	5	Trapping the Bear	Hunting Moose	Down South	
	6	Fishing on the Moon Dam Rapids	Hunting the Tiger	The Voyage	
	7	Hunting	Games	———	
	8	Moose Hunting	———	———	
	9	Fishing Excursion in Blackwood Lake	The Dutch and French War	The Wreck of the Petitcodiac	
	10	The Midnight Wreck	The Notable Train Robbery	The Murder of Mayor Brown	
	11	With Sir John Moore in Spain	A Week in the Woods of New Brunswick	Captured by Indians	
	12	Fishing in the Salmon River	Lost in the Jungle	Back from War	
	13	A Moose Hunt	Fishing	The Country Fair	
	14	A Stag Hunt	A Raid on the Hurons	A Lucky Strike	
	15	Fighting Unknown Worlds	Adrift	The Great Chief	
	16	Hunting	Fishing	A Picnic	
	17	The Bore (Tidal Wave)	The Advance of Time	A Canoe Trip	
	18	Our Great Fright	The Swimming Match	Tenting	
	19	Fishing	Hunting	A Boat Sail	
Hunting		6	5		11
Fishing		4	2		6
Sea		3	1	3	7
Narrow Escapes		2	1		3
War		3	3	3	9
Left Alone or Lost		—	1	1	2
Picnic [etc.,				1	1
Canoeing, Boating, Tenting,				4	4
Crime			1	1	2
Unclassified		1	4	5	10

Titles of Stories Selected by the Girls.

Subjects.	No.	First Story.	Second Story.	Third Story.	Totals.
	1	Rescued	A Strange Adventure	Lost and Found	
	2	The Lost Found	The Prisoner's Escape	A Journey in a Wilderness	
	3	The Man Attacked by Wolves	The Lost Child	The Dishonest Man	
	4	The Wreck	How Helen Spent her Holi-[days	The Soldier's Return	
	5	Caught by Indians	Lost in the Woods	Boat Sailing	
	6	An Adventure	The Troublesome Crow	A Trip to the Country	
	7	Lost on the Farm	Harry's Escape	Dora Grey	
	8	Lost at Sea	A Strange Adventure	Saved	
	9	Lost in a Storm	Chased by Robbers	A Visit to a Foreign Land	
	10	The Stolen Treasure	At the Picnic	Lost in the Woods	
	11	With the Mermaids	In the Enchanted Castle of the Woods	A Trip through Fairyland	
	12	Shipwrecked	"Winnifred"	The Landlord's Daughter	
	13	Alone	Gladys' Adventure	Lost on the Prairie	
	14	Out in the Cold, Cold World	A Hunting Expedition	A Voyage at Sea	
	15	Among the Mountains	A Hunting Expedition	By the Seashore	
	16	A Day at the Mount	A True Hero	An Excursion	
	17	A Tour by Sea	Weary Gleaners	Fishing Excursion	
	18	Success	Out in a Desert	Thunderstorm	
	19	True Courage	A Battle for Life	Victor Somerville	
	20	Hunting	The Brave Girl	Canoeing Party	
	21	Lost in the Mountains	The Lost Child	Left alone without a Mother	
Hunting		1	2		3
Fishing		0	0	1	1
Sea		4		1	5
Narrow Escapes		1	1		2
War		1			1
Left Alone or Lost		7	4	5	16
Holiday or Picnic		2	2	3	7
Canoeing, Boating, Tenting				2	2
Crime		1	1		2
Supernatural or Mysterious			3		3
Unclassified		5	8	9	22

The motor character of the boys' interests is here evident. It is hard to explain the preponderance of nature stories in the girls' selections. The entire absence of adventure stories from the girls' list may have something to do with it.

3. Tests of Interests by Titles of Stories.

In this test each subject was asked to write out a list of three titles for stories they would like to write. This was given after they had written two series of stories, in the expectation that stories would be written with these titles.

The results are presented above in tabular form (pp. 178-179):

The main points gleaned from these tables may be stated thus:

1. The boys' interests centre largely about hunting, fishing, war and the sea. Under these rubrics the boys have 33 titles, the girls, 10.

2. The girls' interests centre about subjects under the rubrics lost, left alone, picnics. Here they surpass the boys 23 to 3. Other stories should be classed with this, such as those headed "Escaped."

3. The girls have a tendency to use proper names of persons as titles for their stories. In these lists they do so six times, the boys, once.

In general the boys' interests centre about action. Bravery is the moral quality that appeals to them. The girls' interests centre about such emotions as pity and joy after sorrow, about moral questions and social pleasures. The boys are much more specialized than the girls.

For the purposes of comparison a list of the titles of stories actually written, throughout a period of six months, and on subjects chosen by the pupils themselves, is given below:

	Subjects.	Boys.	Girls.
1.	Hunting,	21	3
2.	Fishing,	11	3
3.	Sea,	6	3
4.	Narrow Escapes,	5	1
5.	Moral,	2	4
6.	Pioneering,	2	1
7.	Heroism,	2	3
8.	Career,	2	1
9.	Accident,	2	0
10.	Mining,	2	0
11.	Animals,	2	3
12.	Games,	1	0
13.	Left to own resources,	2	6
14.	Lost or stolen child,	1	8

Subjects.	Boys.	Girls.
15. Robbery,	1	6
16. Travel,	1	4
17. Other Activities,	5	0
18. Picnic,	0	11
19. School,	0	2
20. Holidays,	0	3
21. Clothes,	0	(3)
22. Mysterious and Supernatural,	0	6
23. Love,	0	1(1)
24. Other Activities,	0	7(1)
25. Other non-active Subjects,	0	1

The predominance of the girls under rubrics 5, 13, 14, 15, 18 and 23 should be noted as that of the boys in 1, 2, 3 and 4. The girls wrote more on travel, but it was eminently respectable and civilized travel.

Lobsien found in answer to his question,—"Where would you like to make a journey?" that no trip was too long for the boys, while the girls, except in the lower grades, limited themselves to the home province. (41 : 96.)

4. Tests of Interests by Means of Favorite Poems.

Once a week for eleven weeks a number of selected poems were read to the subjects, and each one required to choose a favorite. They were encouraged but not compelled to give a reason for the choice made, as many judgments were simple intuitions entirely inexplicable by the subjects themselves.

The results will be given in tabular form with notes where necessary under each table. The tables will be numbered alphabetically.

A.

	Sweet and Low, Tennyson.		The Friar of Orders Gray. Percy.		The Reaper and the Flowers. Longfellow.		The Bells of Shandon. Mahoney.	
	Number of Choices.	Average Age.	Number of Choices.	Average Age.	Number of Choices.	Average Age.	Number of Choices,	Average Age.
Boys	1	18	8	14.8	1	19	2	16
Girls	0	—	10	15	9	16.2	0	

It will be noticed that the girls choose either the second or third poems, one a love story and the other a story of death. "The Friar of Orders Gray" was also the favorite of the boys. Those who gave a reason for their choice said it was because it

had a good end. Those who chose the first and fourth poems did so on account of their rhythm.

B.

	The Smack in School. J. W. Palmer.		The Sleeping Beauty Departs. Tennyson.		Robert of Lincoln. Bryant.		Hohenlinden. Thos. Campbell,	
B	Number of Choices.	Average Age.	Number of Choices.	Average Age.	Number of Choices.	Average Age.	Number of Choices.	Average Age.
Boys	5	14.6	1	14	5	16.2	4	17.2
Girls	6	15.3	2	16	2	14	7	16.5

The humor of "The Smack in School" accounted for its popularity with the boys. "Robert of Lincoln" also appealed to the boys as humorous. The boys who chose "Hohenlinden" did so because it was martial, the girls because of its literary style or the element of sadness.

"The Smack in School" appealed to the girls partly on account of its ludicrousness. The sexual element probably, however, had some effect. The average of the ages of the girls choosing it is greater than that of the boys absolutely and of course much more so physiologically.

Only the younger girls chose "Robert of Lincoln." They did so because it was funny. Their age average is two years less than that of the boys who chose the same poem.

C.

	She Walks in Beauty. Byron.		The Pauper's Drive. Thomas Noel.		A Mighty Fortress is our God. Luther.		The Yarn of the Nancy Bell. W. S. Gilbert.	
	Number of Choices.	Average Age.	Number of Choices.	Average Age.	Number of Choices.	Average Age.	Number of Choices.	Average Age.
Boys	1	19	2	15	0		12	15.6
Girls	1	15	6	15.6	2	17.5	8	15.6

Both sexes showed a decided preference for the fourth poem, on account of its humorous character.

The girls who chose the second poem did so because it was pitiful, or because it taught "to be kind to the poor." Of the two boys who chose this piece, one did so because it was "true and funny," the other because it was "sort of comical." This

is characteristic. Two girls, whose average age was 17½ years, chose Luther's hymn.

D.

	For a' That and a' That. Burns.		To Heaven Approached a Sufi Saint. Rumi.		Bingen on the Rhine. Caroline Norton.		The Jackdaw of Rheims. Richard Harris Barham.	
	Number of Choices.	Average Age.	Number of Choices.	Average Age.	Number of Choices.	Average Age.	Number of Choices.	Average Age.
Boys	1	19	0	—	8	15.1	5	15.2
Girls	0		0		16	15.7	2	16

The largest number of choices, by both boys and girls, is given to Bingen on the Rhine, and for the same reason in all cases, *i. e.*, because it is pathetic. It is noteworthy, however, that while 8 out of 14 boys chose this poem, 16 out of 18 girls do so.

The first appealed to one boy, one of the oldest. Those who chose the Jackdaw of Rheims did so because it was "funny." The religious poem got no votes.

E

	Thanatopsis. Bryant.		The Bells. Poe.		The Raven. Poe.		Echo. Saxe.	
	Number of Choices.	Average Age.	Number of Choices.	Average Age.	Number of Choices.	Average Age.	Number of Choices.	Average Age.
Boys	1	18	0		3	16.6	10	14.7
Girls	3	16.3	1	17	7	15.8	5	14.6

The number of boys who chose the humorous poem, "Echo," is noteworthy. As would be expected from previous tests, "The Raven" is the favorite with the girls. One girl said it gave her a funny, weird feeling. The other girls said it gave them a feeling they could n't describe.

The boys who chose it could not give an explanation. Judging by the smiles on their faces while it was being read, it appealed to them as being humorous.

One girl chose "Thanatopsis" on account of its moral teaching. The other two gave no reason.

As shown in table F, the girls seem to appreciate most the craft of Thorberg Skafting. The literary form may, however,

F.

	Rabbi Ben Levi. Longfellow.		Thora, Longfellow.		The Build'g of the Long Serpent. Longfellow.	
	Number of Choices.	Average Age.	Number of Choices.	Average Age.	Number of Choices.	Average Age.
Boys	4	17.2	6	14.4	6	14.1
Girls	3	15	3	15.3	12	15.3

have been the controlling factor. None were able to analyze the reasons for their choice.

The war-like atmosphere probably accounts for the boys' choices of the last two poems.

G.

	The Skeleton in Armor. Longfellow.		The Slave's Dream. Longfellow.		The Norman Baron. Longfellow.	
	Number of Choices.	Average Age.	Number of Choices.	Average Age.	Number of Choices.	Average Age.
Boys	6	15.5	3	16	6	15.3
Girls	3	14	8	15.7	9	16.2

The preference of the boys for the first and the third poems is consistent with results from previous tests, as also that for the second and third by the girls.

H.

	The Goose. Tennyson.		Godiva. Tennyson.		Amphion. Tennyson.	
	Number of Choices.	Average Age.	Number of Choices.	Average Age.	Number of Choices.	Average Age.
Boys	10	14.3	5	16.4	2	19.5
Girls	0		11	15.9	6	16.3

The boys prefer the first because it appeals to them as humorous. Only two of the boys chose the third, the fantastic and light humor of which appeals to six of the girls. Godiva, as would be expected, is the girls' favorite. The figures for average age perhaps is worth noticing.

I.

	The Bridge of Sighs. Hood.		The Song of the Shirt. Hood.		How the Sailor Got his Bowlegs. Hood.	
	Number of Choices.	Average Age.	Number of Choices.	Average Age.	Number of Choices.	Average Age.
Boys	3	17.6	1	20	14	14.3
Girls	6	16.1	7	16	7	14.7

Nothing could be clearer, in the light of other tests, than the general meaning of these results. Thirteen of the girls to four boys chose the first two poems which are pathetic in their nature. Fourteen boys to seven girls chose the third. Both the boys and girls who chose the third average in age much less than the other subjects, while the boys who chose the first and second are older than the girls who do so.

J.

	Hervé Riel. Browning.		Incident of the French Camp. Browning.		The Glove. Browning.	
	Number of Choices.	Average Age.	Number of Choices.	Average Age.	Number of Choices.	Average Age.
Boys	12	14.9	3	16	1	18
Girls	8	14.5	8	16.7	2	16.5

"The Glove" was read only to the incident of throwing the glove in the lady's face. This displeased both boys and girls. The boys liked Hervé Riel on account of its action, the girls, on account of the hero's character. That more girls than boys chose the second is consistent with past results.

K.

	Belts. Rudyard Kipling.	Mandalay. Kipling.	Clampherdown. Kipling.
	Number of Choices.	Number of Choices.	Number of Choices.
Boys	9	6	0
Girls	10	1	7

"Belts" and "Mandalay" pleased the boys immensely. In the latter the stanza describing the meeting of the "Burmah girl" and her soldier lover, and the stanza beginning "ship me somewhere east of Suez," met with most favor. The attraction of the piece to the boys seemed to consist in its humor and unconventionality.

Considering its fine rhythm, it is somewhat surprising that only one girl chose "Mandalay." The whole poem seemed shocking to them, especially the parts the boys liked. Their choice of the war-like poems was therefore compulsory. The touch of humor in the first secured for it the larger number of choices.

The only new point of importance brought out by this series of tests is the importance of the interest in the humorous in both sexes, but especially among the boys. Even in this field, among the boys, the humor must be of an active type with human interest. The humor preferred by the girls is of a more refined nature. In both sexes the strongest sense of humor is found usually in the younger subjects.

The attractiveness of the sad and pitiful for the girls is well brought out, as well as their moral interests. Where the boys betray any interest in these directions, they are the older boys.

The general conclusion of all the interest tests may be summed up as follows:

The interests of the boys are predominantly active, embracing such subjects as hunting, fishing, seafaring, war, etc. The boys' sense of practical humor is strong.

The interests of the girls are largely emotional, centering especially about such emotions as pity and fear. They have strong moral and social interests. They have a leaning toward the mysterious and supernatural. They have a strong sense of humor, somewhat refined and fanciful. They do not show the same specialization of interests as the boys. Their motor interests are not of so strenuous a type. The picnic figures largely in their lists instead of the hunting and fishing of the boys.

Many have noted the motor interests of boys. Sully says that "Robinson Crusoe is probably for the boyish imagination, more than anything else the goer and the doer." (59 : 26, 27.) Hall and Smith, in their study of "Curiosity and Interest," state that "nearly twice as many boys as girls, according to the present data, show special interest in mechanics. . . ." (33 : 335.)

Miss T. L. Smith writes: "With the average healthy boy from ten to fifteen a large part of his day dreams appear to be connected with sports and athletics. . . . Dreams of hunting, fishing, swimming, being a cowboy and living on horse-

back, travelling in unexplored countries are characteristics throughout the teens. (54 : 472.)

And again: "Girls dream of travel as much as boys, but when details are given, they are of comfortably civilized travel and rarely include elements of adventure." (54 : 472.)

A parallel exists between the interests of our subjects and their actual activities. In the playground the boys were always jumping, running, wrestling, playing ball and indulging in other very active games. The girls would walk together arm in arm, play ball with a soft rubber ball, or engage in some other form of mild activity, when not talking over lessons or some other topic. On holidays the boys went hunting or fishing whenever they could. The girls were fond of picnics, fresh water pearl fishing, etc.

Lobsien, in his "Kind und Kunst," declares that the boys prefer games which demand courage, skill and strength, the girls, those which are soberly ordered. (41 : 97.)

In "Showing off and Bashfulness as Phases of Self-consciousness," Hall and Smith found that "differences of sex, so far as they appear, seem to lie in the superior motor activities of boys, though how far this is due to inherent sex differences or to cumulative effects of environment is uncertain. Boys show off chiefly by exhibitions of muscular activity; girls by dress and accomplishments; boys brag of what they can do, girls of their possessions." (34 : 32.)

We have seen that the activities of the girls were less strenuous than those of the boys. Perhaps it would be a better statement of the sex difference to say that boys delight in activities which require the exercise of the massive muscles as well as the others, while the girls engage in activities which mostly involve the accessory muscles. In this regard the above mentioned study contains the following passage: "The products of training on the finer accessory and muscles and movements are almost a class by themselves for our purpose. Imitation on the part of children and the young are often a form of flattery that is abject and gross. *Here girls are more plastic than the boys*, more apt in putting on and off vivacity, languishing moods, drawling speech, fine ladyism, superior ways, accents and airs of many kinds; their penmanship, pronunciation, choice of words and style are all subject to affectation." (34 : 33.)

We have, then, a certain parallelism between the physical activities and the motor interests natural to youth. Dr. Hall says that "interest and play are one and inseparable as body and soul." (32 : I, 233.)

A sort of reciprocal relation seems to exist between physical activities and the emotions. Great physical activity seems to

go with comparative poverty of emotions, and *vice versa*. The emotions which appeal to the boys are those which accompany physical action, of which joy in being a cause is most prominent. (30 : 384, 385.) (*Cf.* also 33: 227.) This emotion does not tend to inhibit action. The emotional life of the girls, while including this, includes many others, such as pity, fear, etc., which may be aroused without the intervention of activity, and which, in great stress, tend to inhibit action. The whole question of interest is bound up with the emotions. There is no particular feeling of interest, although interest is at bottom affective. There are interests. Every object which inspires feeling in the subject is an interesting object, positively or negatively. That is positively interesting which gives rise to a feeling which one would like to experience again. The girl, with her richer emotional life may find gratification without great physical activity. The boy, with his emotional poverty, specializes on those of which he is most capable, *i. e.*, those arising from active exploitation of the physical self.

The theory of interest advocated here is of course not universally accepted. Arnold, in his article on the psychology of interest, shows clearly that the weight of psychological opinion leans toward the view that interest is essentially affective.

This he himself denies. To him it is essentially conative or cognitive. Feeling is regarded as, where present, simply a concomitant. Conation, however, he defines as "felt body attitude tending serially to realize a future situation." (4 : 305.)

But a bodily attitude is not a psychical but a physical phenomenon. To be intelligible psychologically, the phrase would have to be translated into something like this—"the feelings that go with body attitude." This of course makes interest essentially affective.

The comparatively dynamic character of boys' interests and emotions, and the comparative static character of girls' interests and emotions has been too generally observed to need further amplification. It is due in part no doubt to the effects of social environment, but that it has a physical and physiological basis is undoubted.

Thomas finds associated in males high specific gravity, red corpuscles, plentiful hæmoglobin, and a katabolic disposition. In females he finds a lower specific gravity (except in old women), fewer red corpuscles, less hæmoglobin, and an anabolic disposition. (61 : 33.) He also quotes Wagner and Huschke to show that the brain of woman is in a more or less embryonic condition. (61 : 19.) If emotional psychic processes are more original than cognitive processes, this comparatively embryonic condition of the brain might explain in part the greater emotionalism of the sex. Thomas quotes Ranke to show that the female sex has relatively longer bodies, and

therefore shorter limbs, *i. e.*, poor conditions for the expenditure of energy through motor action. (61 : 21.) This greater length of body coupled with greater abdominal prominence and greater volume of the sexual organs, on one commonly accepted theory of the emotions, would account for the emotionalism of females.

5. Memory Tests.

These were not conducted as absolute tests of memory, but were meant simply to give data for comparison of memory power between different sexes and subjects. They were relative memory tests. In the first group (a) passages from various authors were written on a blackboard, and kept covered until the beginning of the test. A definite time was given for committing each passage to memory. Then each subject was required to write down what he or she could remember in the words of the selection if possible, if not in the subject's own words. In the second group (b) passages were read over carefully to the subjects a certain number of times. In the third series (c) eight hours a month were given for drawing some map in the presence of the writer. The best map produced by copying from the book was kept. Then each subject was required to draw the map from memory. The two maps from each subject were then compared with one another and with the maps of others.

a. The results of this test as they related to sex differences of the subjects tested are given below.

	Average percentage of correct words.	Average percentage of words left out.	Average percentage of words replaced by equivalents.	Average percentage of words replaced wrongly.	Average percentage of words transposed.	Average percentage of words inserted.
Boys	71.5	20	4.4	4	0	.2
Girls	78.5	16	2.2	.3	0	3

This seems to show a slight superiority of the girls over the boys. A comparison of individuals shows no connection whatever of memory with imaginative power.

b. Below are similarly given the results of these tests.

The girls very considerably surpass the boys in verbal memory in these auditory tests. The boys, however, are fully equal in their memory of the ideas contained in the passages selected as will be made evident by adding the figures in the first and third columns. Perhaps the superior verbal memory for spoken words, possessed by the girls, is connected with the fact that they surpass the boys in auditory imagery.

	Average percentage of correct words.	Average percentage of words left out.	Average percentage of words replaced by equivalents.	Average percentage of words replaced wrongly.	Average percentage of words transposed.	Average percentage of words inserted.
Boys	17.4	18.9	63	—	.3	1
Girls	37	20.7	40.9	.5	(.5)	1

c. For the purpose of evaluation the maps were divided into eight groups. Those in the lowest group were valued from 20 to 30, and so on up to 100.

On maps drawn from book the boys averaged 72 and the girls 76. On maps from memory the boys averaged 58 and the girls 65. The girls not only surpass the boys in both, but there is less difference between their copied maps and their memory maps. Whether this is due to superior eye mindedness on the part of the girls, or inferior interest and attention on the part of the boys, is a question. The superior training of the girls in accessory movements and muscles may have something to do with this. Finally, the girls seem to be superior in memory to the boys. Differences between the sexes or individuals of the same sex seem to have no connection with differences in quality of the imagination. Binet reached similar results in his "Étude Experimentale de l' Intelligence," quoted above.

6. Tests of Mental Imagery.

These were conducted on the lines of Lemaitre's study of mental imagery in children, and were confirmed by repeated questioning and observation extending over six months. The general results are given in the table below.

	Visual imagery predominant.	Auditory imagery predominant.	Kinæsthetic imagery predominant.	Visual imagery in second position.	Auditory imagery in second position.	Kinæsthetic imagery in second position.	Visual imagery in third position.	Auditory imagery in third position.	Kinæsthetic imagery in third position.	Equilibrated.	Auditory and Visual balanced in first place.	Visual and Kinæsthetic balanced in first place.	Auditory and Kinæsthetic in second place.	Auditory and Visual in second place,
Boys	8	1	4	1	4	3	2	1	1	5	1	0	3	1
Girls	15	2	0	6	9	4	0	2	2	0	1	2	5	0

The girls excel in visual and auditory imagery; the boys, in motor. The boys afforded five examples of the equilibrated type; the girls none. It is likely, however, that in some of the five marked equilibrated, the motor images really predominate. Owing to the difficulty of introspection in this field, especially for young and unpractised subjects, it was impossible to get data sufficiently definite to warrant giving kinæsthetic imagery the first place in these cases. These tests were aimed to determine the order of importance of the imagery as habitually used, not the ability voluntarily to control it.

The predominance of the boys in the motor imagery is probably due to their physical activity. Even among the boys, those most active are almost without exception those which have the clearest kinæsthetic imagery. Of the six most active boys, two belong to the equilibrated type, in two the Kinæsthetic imagery predominates, and in one it holds the second place. The same relation holds with the girls in less degree.

7 and 8. Succeeding these somewhat detailed preliminary tests, came the imagination tests proper, a series of stories written by the subjects of this investigation. They were fourteen in number, divided into two groups, viz., one of five, the subjects of which were chosen by the subjects, and one of nine, in which the subjects were presented with pictures upon which the stories written were to be based. Stern and others have made use of pictures in a similar way as a test of the imagination. The method here corresponds to the "Bericht" of Stern's stories. The "Verhör" was not used consistently throughout, but only to throw light upon the character of the materials used in the stories. (68.) The stories of both series were analyzed according to (a) their use of names of persons or animals, (b) is the use of the first person, (c) use of details of pictures in the second group, (c) imaginative quality, (d) unity, (e) number of pages, (f) explanatory power, (g) religious, moral and social elements, (h) other elements.

The pictures employed in the second group were as follows:

1. The Runaway. Dupré. Large level field, with boy chasing a cow in foreground. Women milking in background, with several cows standing and lying around.

2. The Moose. In the foreground is a small stream, on the bank of which is a man crouching behind an upturned birch canoe. Beside and around him are his camping outfit. He is reaching for his rifle. At about the middle of the picture is a large bull moose standing in a mass of low bushes and looking toward the canoe. In the background is the forest.

3. Indian on Broncho. In the left foreground, on an eminence, an Indian in war paint and feathers, rifle in hand, seated on a broncho with large brown and white spots. The

ground slopes away gradually to right background, where are the indistinct figures of three people.

4. Saved. In foreground a shelving beach. A large dog sitting down with a child across its front paws. The remains of a wharf on the edge of the beach. Sail in background. Seabirds flying about in distance.

5. Adrift. In foreground a man and boy on a raft adrift on the ocean. The man is waving a signal with his left hand while he supports the boy with his right. A sail in the distance.

6. Friend or foe. Burton Barber. In foreground, a toad. Watching it, a little girl on her hands and knees, with a cat and dog on either side. House in background.

7. Mouse-trap. A man clad in night shirt; hair standing on end; holding up one foot on the great toe of which is a mouse-trap. From the hole of the mouse-trap opposite the toe protrudes the hind quarters and tail of a mouse.

8. End of journey. C. B. D'Entraigues. In foreground, a brook from which a horse is drinking. On his back are two boys. Beside stands a young woman without boots or stockings.

9. Stag at Bay. Landseer. In foreground, a stag beset by dogs, one of which is struggling on his back. A sheet of water in the background. A sullen sky.

During the writing of the stories the pictures were kept in full view of the subjects. No opportunity was given for conversation or comparing notes.

(A.) Use of Proper Names.

In the series of five stories, the subjects of which were selected by the subjects, each one for himself or herself, there were 68 written by boys. Of these, 23 used the names of persons, none used the names of animals, and 45 used no proper names. None of the boys used proper names as the titles of stories.

In the same series the girls had 77 stories. Of these 39 used names of persons while 38 did not. In five cases proper names were used as the titles of stories and two other titles contained proper names. These titles were as follows: Rhoda, Grace Darling, Lord Portmercy's Daughter, Nellie's Convulsion, Helena, Jack Black, and Snowdrop.

In the series where the subjects were suggested by pictures, the boys had 138 stories. Of these 31 used names of persons and 16 the names of persons and animals. No proper names were found in 79 stories. Three used proper names in titles. These titles are, Fido and the Toad, Jessie's Toad,

How Billy Lost his Toe. The percentage of those using proper names rose from 33 in the first series to 42.7 in the second.

In the second series the girls have 159 stories. Of these 51 use the names of persons, 16 the names of persons and animals, and 4 the names of animals. Proper names are used for the titles of six and in the titles of nine stories. These are,—Fly-away, Bill Riley, Jack, How Carlos Saved his Master's Life, Faithful Fido, Daisy's Pets, Helen's Friends, Laura's Pets, Freda's Pets, Helena's Toad, Mr. Jones's Investment, Brownie, The Three Joneses.

We would naturally expect to find less interest on the part of the subjects in the second group than the first, and consequently a decrease in the manifestation of any impulse to name, since with youth as with primitive people interests centre about or tend to centre about individuals. This we find to be the case with the girls, whose percentage falls from 50 to 44.6. With the boys, as we have seen, the reverse happens. For this there are two reasons, one of which will appear when we come to consider the use of the first person. The other possible partial explanation is this, that in the first series the motor interests of the boys had full scope, while in the second, the presentation of the picture throws kinæsthetic imagery into the background, while not visual images but direct vision takes its place. As the sight of individuals habitually calls up their names, so the sight of the figures in the pictures tend to suggest names. The girls, owing to the weakness of their kinæsthetic and the predominance of their visual imagery, would not be so strongly influenced by this tendency as the boys. It contributed to counterbalance the effect of loss of interest.

Even in the second series the predominant interest of girls in names of individuals is stronger than that of the boys. This is seen clearly in the use of proper names in titles. In the two groups there are twenty such cases in the girls' stories and only three in the boys'. In the story on the picture entitled "Friend or Foe," three of the girls name the dog, the cat, *and the toad*, as well as the child. One names two toads. This is in marked contrast with the practice of the boys.

This interest in names means more than an interest in individuals. There is interest in names as names, witness the peculiar character of some used by the girls. They like fancy names, names with titles, and picturesque names. They even invent names. One girl calls her heroine, Lady Barbarity. Bill or Jim is usually sufficient for the boys. The family name is rarely used, titles never.

Like that of primitive man the thinking of boys and girls is particular rather than general. Children are more interested in feats of heroes than in the advance of nations. Fairy stories,

folk tales, myths are concretionary in character, with some great name as the centre of the concretion. (63 : 278.)

Names have a sort of mystical power to primitive races. Davidson writes: "It is difficult for us, moderns, to realize how concept and sensible symbol were related to each other in the mind of the savage. We may perhaps say that, for him, the symbol, instead of representing the object, contained its essence or concept. . . . . In uttering the name of a thing, he was breathing forth its essence, for good or for evil. . . . (19 : 19.) Davidson quotes Sydney F. Smith's statement that "sacramental words, according to Catholic doctrine, are words of power." (19 : 18.) All this survives even among enlightened peoples to the present day, in an emasculated form. The ceremony of naming the baby is still a momentous one, and differences as to the name to be chosen have led to the divorce court.

With young children a person's name is not clearly distinguished from the person. The writer knows a child of four years and a half who, since his second year, has persisted in asking "who is his name?" On one occasion in speaking of an absent person, he remarked, "I can't remember her to see her, but I can remember her to hear her," meaning that he could remember the name.

Stern finds that girls give a larger place than do boys in their stories to persons and their actions, in the proportion of four to three. (68 : Vol. I, p. 408.)

(B). The Use of the First Person.

In the free choice series 31 out of 68 boys' stories were written in the first person. In the second series 29 out of 138 were written in the first person. This use of the first person, then, by the boys, is in a general way inversely proportional to the use of names of persons. Where the boy is greatly interested he tends to write in the first person, while names of others take a secondary position. So in the first series we find a greater use of the first person than of proper names, while in the second we find a greater use of proper names than of the first person. A partial explanation, then, of why the boys in the second series increased their use of names, while the girls did not, may be that with decreased interest, the boys allowed other people to be the heroes of the stories. In both sexes when interest is at the lowest point, neither proper names nor the first person is used, but the story is written impersonally. That difference in interest is the true explanation is shown not only by contrast between the two series, but by comparison of results within the second series. In this the only picture which directly suggests hunting, is the moose picture. Of the fifteen

boys' stories written on this picture, *eight* were written in the first person, while only two contained proper names.

In the first series, out of 77 girls' stories, only twelve were written in the first person. Out of 159 in the second series, only seven were written in the first person. Here, also, the use of the first person drops with decrease in spontaneous interest. That 60 boys' stories out of 206, and only 19 girls' stories out of 236 were written in the first person, is significant.

Taking together the results of tests a and b, it might be said that the sex difference, inherent or the result of education, consists in this, not that boys are less interested in persons, but that while the imagination of the girls is third-personal, that of the boys is first-personal.

This ego-centric characteristic of the boys has been noted in Miss T. L. Smith's study of day-dreams. She says, " . . . the boys dreamed of all sorts of wonderful flying machines, sometimes mentioning the rate per hour of trips in a balloon or by means of mechanical wings of which they were in some cases the inventors." (54 : 469.) And again, in quoting from a boy's day-dream,—"Once *I dreamed that I and some other boys were racing*. We had to go around the track three times, and *I won the race*."

Now, why should boys use the first person more than girls? It would seem to lie in the difference of physical activities. In boys' games, every joint and muscle, especially every large muscle, is brought into active play The boy becomes very conscious of his physical self. His kinæsthetic sensations are very clear and his self-feeling well developed. The sensations and feelings which go to make up the idea of self, especially the physical self, are thoroughly developed and organized. The boy becomes *physically*, largely unconsciously or sub-consciously egoistic. The "I" appears naturally in his stories.

The girl's life is more psychic, and especially more emotional. Her egoism, where present, is of central rather than of peripheral origin. This form of egoism is *self-conscious*. It may even suppress in writing the "I" uppermost in consciousness.

C. Use of Details of Pictures in the Second Series.

Throughout the whole series the stories of the girls contain by far the greater number of details, but with regard to the use of the details of the pictures the case is reversed.

The boys not only make more use of the picture's details, but work them up more effectually as organic parts of the story. Thus in the "Indian on Broncho" story, only two, both boys, noticed a bird soaring high in the air. To one it was a vulture awaiting the outcome of battle to feast on the bodies of the slain. In the "Saved" story two boys notice the gulls and

bring them naturally into the story. A leaf on the walk in the "Friend or Foe" story is noticed by only one, a boy. He says that it is a maple leaf that the cat has just stopped playing with.

Again, the girls while using large numbers of details not in the picture, are prone to leave out even prominent details of the picture. Thus in "Adrift" one girl does not mention the raft. In "Friend or Foe" the cat is not mentioned in one of the girl's stories. Two girls omit the mouse in the "Mouse-trap" story.

The stories were divided into three groups according as they had (a) all or nearly all the details of the of the picture, (b) some details, (c) few or no details. Of the 138 stories written by boys, 80 were in the first group, 40 in the second, and 18 in the third; while of the 159 stories written by girls, 43 were in the first, 53 in the second, and 63 in the third.

This may be partly due to the more varied interests and psychic material of the girls. The presentation of the picture was immediately followed, perhaps, by a flood of suggestions and associations which found their place in the story often to the exclusion of what was contained immediately in the picture. Often the picture did nothing more than suggest a title for the story. The boys were more dependent on the picture for material for their stories.

It would seem, however, since the boys work up the details better into an organic whole, that, having a greater power of constructiveness, they are capable of using the material ready to hand, while the girls find it easier to use materials more habitually worked over in their thought or experience. Both follow the path of least resistance.

Stern, in an early study, came to the conclusion that women forget less but make more mistakes. If the total amount of material, irrespective of its origin, is taken as the measure of geueral memory, this statement agrees very well with the results of this study. But in Stern's experiments the subjects were confined to the materials provided by the picture. In a later study of children, he found that the girls were inferior to the boys in receptivity, in the taking in of knowledge, but still more in spontaneity, in independent reproduction (without suggestion) of the acquired knowledge. If the subjects of the present study had been limited to the picture material, similar results might have been obtained; at any rate the girls reproduced fewer details *of the picture*, and made more mistakes. (68: Vol. I, pp. 399, 400.) Perhaps Stern's results would indicate not so much a poorer receptivity as a greater tendency to *wandering imagination*.

Marie Borst, in a study on the fidelity of testimony, the sub-

jects being adults, found that "l'entendue du témoinage" of men was but 76% of that of women in free reproduction, and 83% when questioning was resorted to. The relative accuracy of the sexes was found to be in the proportion of 96 for men to 100 for women. An analysis of the figures in detail shows that men make about the same number of mistakes, but make fewer correct statements. (13a: 306, 307.) These results do not correspond with the results of this study. The methods are, however, quite different, as well as the ends in view, and the ages of the subjects.

D. Imaginative Quality of the Stories.

Imagination is here used, of course, in the sense of productive imagination. For this purpose the test was that suggested by Ribot, does the story contain anything new to the writer's experience?

Of course, here, new means, not new as to psychic elements, but new as to combination of these elements.

The stories were grouped as carefully as possible into four divisions, (a) highly imaginative, (b) imaginative, (c) having some imagination, (d) unimaginative.

The following table shows the general result.

	a	b	c	d
Boys	5.82%	68.45%	14.08%	11.65%
Girls	2.12%	73.31%	16.95%	7.62%

Among the boys there are both a large number who excel and a larger number who fall behind than among the girls, while more girls are of average imaginative power.

E. Unity.

By unity is here meant structural unity. Wherever there is productive imagination some degree of constructiveness is involved. But there may be some degree of constructiveness without unity of the whole. A story may consist of a series of incidents, each in itself involving productive imagination, and yet such parts may be disconnected or but loosely connected. Here there is evident lack of structure, not within the constituent parts but between them. Such a story would be said to lack unity. Where all these incidents are subsidiary and tributary to a main incident, the story would be said to possess unity.

In the first series 51.4% of the boys' stories possess unity.

In the second series 68.1%. The pictorial unity was apparently reflected in the stories.

In the first series of girls' stories 45.4% had unity, while in the second 49.6 had unity. Here the improvement was not nearly so conspicuous as among the boys.

The cause of this is probably to be found in the greater variety of imaginative material on the part of the girls, and a greater specialization on the part of the boys. The pictures would call up a greater number of associations of the girls. This of course would tend to operate against unity.

But how explain the fact that in both series the boys surpassed the girls in this quality? Partly, probably, on account of the girls' great richness of imaginative material. But the boys show more constructive ability in the fields where their interests lie, and therefore where their imaginative material is greatest, than the girls do in their favorite fields. There is probably a greater power of construction among the boys.

Miss Smith, in her study of day-dreams, found that a large number of children were familiar with the story of "Alladin's Lamp and the Magic Carpet." In the day-dreams of the girls it remained practically unchanged, while in those of the boys the motive power instead of remaining a magic carpet became a flying machine of some wonderful sort. Certainly here the boys showed as much power of working up extraneous material into the story.

History might be brought to witness that the male sex has produced the greatest number and the best quality of poets, novelists, architects, painters, sculptors; in fine that man has excelled in all activities where constructive ability is required. This would not of course prove any innate superiority any more than in our present study is proved any innate superiority of boys over girls in power of giving constructive unity to their stories. Nevertheless the parallel is suggestive.

As we have seen the interests of girls are more passive than those of the boys. Passive is often preferable to active motion. Swings, boating, etc., are very popular with girls. The physical structure of the sex as well as their habitual activities in the home, which are so multifarious and tend to dispersion of interest and attention, and which develop particularly the subsidiary muscles, tend against such general muscular activity as would unify the physical structure and bring about proper subordination in the parts.

If it be assumed that biological organization began with action, and that growth of complexity in unity has increased phylogenetically with the development of activity and has been produced by it; then it would appear that ontogenetically differentiation, organization, and unification would proceed *par*

passu with the activities, and in the early stages with the physical activities, of the individual. With boys the natural order of fundamental before accessory is carried out more clearly than with girls. The large fundamental activities develop the fundamental muscles and the fundamental motor and sensory centres. To these are added from time to time developed accessory muscles and their corresponding centres. The result under ideal conditions is a unified physical and neural organism, with a parallel psychic life, having due proportion between its parts. May not a unified physical organism be more likely to be characterized by a psychic life which produces unified structures, than one which is not itself a unity?

That there is a close connection between physical activity and psychic constructiveness is shown not only by a comparison of the sexes, but by a comparison of individuals of the same sex. In this study the stories of those who are most active physically are, with few exceptions, characterized by unity. The most active girl and the most active boy wrote stories 100% of which were classified as having unity. The parallel holds with greater or less exactness right through the list, being most marked where the physical activity is very great or very little.

In the stories of these tests, unity was found to be destroyed in several typical ways. Wherever the composition (a) was not a narrative, (b) was made up of a series of disconnected incidents, (c) was topheavy, *i. e.*, made great preparations for a small dénouement, (d) contained irrelevant details, (e) was a mere series of sentences without clear meaning, (f) betrayed general lack of structure, involving two or more of the above or following defects, (g) was entirely descriptive of some actual event or of the picture presented, (h) was a reproduction of something read, (i) was clearly a case of plagiarism, and was considered to fall under the heading, "lacking unity."

The following table shows the general results of the above classification. The figures represent the number of stories lacking in unity in the several ways.

	a	b	c	d	e	f	g	h	i
Boys	13	17	—	2	1	28	14	1	1
Girls	10	12	16	28	1	38	12	2	2

The boys wrote a slightly greater number of compositions that were not stories. These were not purely descriptive like those under rubric (g). Of the 13 compositions under (a) 8

were written by the oldest two boys. These productions were neither narrative nor purely descriptive, but rather essays or lay sermons, containing views of life, arguments as to selection of a calling, etc. This tendency is no doubt, to a certain extent, characteristic of age, but the blighting effect of the ordinary school upon the imaginative processes may have had something to do with it. At any rate those who wrote this type of composition were for the most part those who had been going to school thirteen or fourteen, or even fifteen years.

The fault shown in column (b) is typical of the boys. Column (f) also contains many stories betraying this fault. These stories resemble a series of beads on a string, the string corresponding to the general subject of the story, such as hunting or fishing. Perhaps a better comparison would be a series of snap-shots on the same film. The boys whose stories show this fault are usually the younger ones, who, while their images are very vivid, lack constructive power.

Columns (g), (h), (i), as well as (a), already mentioned, are filled by those lacking imaginative power. The total for the boys is somewhat larger than that of the girls, and is of course relatively still larger, since there were fewer boys than girls. There is then, as has been said, a greater number of boys than of girls deficient in imagination.

Columns (c), (d) and (f) indicate that redundancy of detail is the great destroyer of unity in the girls' stories. This is directly in line with other results of this study already noted.

F. Length of the Stories.

In this test about 125 words were reckoned to a page.

In the first series the stories of the boys averaged 1.38 pages; in the second, 1.10 pages. The stories of the girls in the first series averaged 1.60 pages; in the second, 1.27. Both sexes write shorter stories where the subjects are suggested to them from outside. In both cases the girls write on the average longer stories than the boys. The decided drop in the number of pages from one series to the other is no doubt the effect of a drop in interest. A scanning of the results in the group of stories suggested by pictures strengthens this explanation.

In the "Moose" and "Adrift" stories the boys average highest,—1.25 pages. Next comes the "Stag at Bay," and next the "Mouse-trap." These are the stories that former tests indicate as probably the most interesting to the boys.

With the girls, "Adrift" occupied the first place, with an average of 1.52 pages. The pathos of the picture appealed to them. Next came the "Indian on the Broncho" with its suggestions of massacre, women and children left alone on the frontier, etc. The stories on this subject averaged 1.51 pages.

The "Mouse-trap" also averaged 1.51 pages. It is to be noticed that the humorous picture appealed strongly to both sexes.

G. Explanation of the Pictures by the Various Stories.

In the power of explanation or fitting the stories to the pictures in such a way as to explain the situation indicated by the picture, the sexes are fairly equal, although the boys seem to have a slight advantage.

The stories were arranged in three groups according as they (a) explained well, (b) explained poorly, or (c) failed to explain. The results are expressed below. The figures represent the number of stories.

	a	b	c	Total.
Boys	115	8	15	138
Girls	110	23	26	159

H. Religious, Moral, Social and Other Elements.

The boys' stories make no reference to religion. Two stories by girls are primarily religious. One tells how a box of useful articles was made up for the missionaries. Another describes a Christian Endeavor Convention and mentions the conversion of friends. Incidental references to religion occur throughout the girls' stories.

Both sexes betray interest in moral questions, but the boys much less than the girls. The girls show a decided tendency toward moralizing. Even the "Mouse-trap" story provokes much of this. In the first series at least eight stories by the girls turn on moral questions.

In many cases the boys show a decided preference for illegal activities. As many as seven stories are of spearing salmon, and one is of hunting moose with dogs, serious offences against the law in the district where these stories were written. No disapprobation is expressed, but rather the moral question involved is ignored. It is evidently not a case of immorality but of non-morality. With the boys, considerations of prudence appear frequently. One boy decides to play truant no more as the resulting thrashing more than counterbalances the pleasure obtained from temporary freedom. Another decides never again to steal cake in the dark when there are mouse or rat traps in the house.

Where the boys choose as subjects for stories activities in which but one or perhaps two or three can engage simultaneously, the girls choose such activities as excursions and picnics. This seems to be partly due to a difference in social instincts.

Long ages of training in different spheres may have led to a permanent sex difference now inherent in the individual. The predominance of the hunting-fishing psychosis in boys and of the food-preparation psychosis in girls may in part be due to this. The influence of the social environment of the individual must be a tremendous and perhaps the chief factor.

Food is mentioned often with both sexes. The boys think only of devouring it, and never mention its preparation or the manner of serving. The girls, on their picnics and excursions, usually relate with great detail the packing of the dishes and food, the spreading of the tables, etc.

The boys never mention clothes. Three of the girls' stories turn on this subject, while many incidental references are made throughout the stories.

Money is mentioned frequently. The boys usually refer to a definite amount, the girls to a "large sum."

Conclusion and Résumé.

The subjects of this investigation were studied from many standpoints and for a period of six months. The writer was intimately acquainted with each one, knew his or her social surroundings, and in most cases knew the parents personally. The youths who were the subjects of this study were normal individuals of at least average physical and mental health. It is hoped that similar investigations in other localities will be conducted, which may more fully establish or refute the results of this study. It is stated now to avoid unnecessary repetition, that no finality is claimed for the conclusions here set down except for the particular conditions under which the investigation was conducted, and save where these conclusions are supported by evidence culled from other sources. Wherever these conclusions may seem to be dogmatically expressed, it is to be understood that dogmatism is not intended.

One result of this study is to make apparent the fact that the imagination of youth between thirteen and twenty has a wide range and great fertility. It may be true, as Lindley says, that "every *child* may indeed be a 'genius,' but not of the inventive and creative sort (40 : 480); but of the *youths* of this study it is certainly true that all but two or three have some germ of the same imaginative processes that are found in more

perfect form in the inventive and creative genius, while many have imaginative power of no mean rank.

Hall and Wallin, in their study of youth's reactions to clouds, speak of the prolificness of the youthful shape fancying impulse. (35 : 376.) They state that clouds "can arouse impulses that run the entire gamut of feeling; that touch every chord of sentiment, from the smooth and gentle to the large and terrible." (35 : 475.)

What is here stated to be true of the clouds is true of the whole natural environment of the youth. Partridge, in his study of revery, writes of the profound effect of music, nature, twilight, upon the spontaneous activities of the mind. (47 : 455.)

Indeed, it would be strange if in youth the imagination did not reach a somewhat highly developed stage. The work of such authors as Miss Shinn and Paola Lombroso, shows that imagination begins early in the life of the child. A résumé of the results of such studies is to be found in Chamberlain's book on the child. (17 : 83-85, 324-327.) Whether during childhood imagination or imitation predominates, may be a question. Some, at least, have believed that the former predominates. Dr. G. Stanley Hall, writing on "Children's Lies," says that "we might almost say of children, somewhat as Frohschammer argues of mental activity, and even of the universe itself, that all their life is imagination." (31 : 215.) If this be true of the child whose plays largely consist of passive motion (swinging, sliding, etc.), is it not true of the youth with his superior physical activity and his greater power of constructiveness?

The interests of youth are various, but those of the boys are less multiform than those of the girls. The boys specialize on motor interests. The interests of the girls are more static and emotional. These differences are based partly, at least, on inherent anatomical and physiological differences. (*Cf.* 6 : 303, and above.)

In imagery the girls excel in visual and auditory; the boys in motor imagery.

In both visual and auditory memory the girls surpass the boys; but excellence in memory does not seem to have any necessary connection with imaginative power.

The use of names of persons and animals is quite common in both sexes; but far more so among the girls than among the boys. Where interest is keen, the girls tend to group their imaginative material about definite individuals with definite names. The girls have a stronger interest in names as names, apart from their use as symbols for individuals. Fanciful and striking names are used by them most frequently.

Both sexes tend to write in the first person where interest is

very strong. This tendency is far more apparent with the boys than the girls. Where interest is at a minimum, neither proper names nor the first person is used by either sex.

The boys use more details furnished by the pictures than the girls, and have more power to work them naturally into the woof of the story. The girls, however, write stories that are far more detailed. In the words of Alfred Austin, "they are interested in the individual joys, sorrows, sins, sufferings and emotions generally." The emotional material in the imaginative productions of the girls is very large. The great predominance of pity, sadness, fear of being left alone, etc., suggest almost a neurotic tendency, which may be due to the unnatural conditions of the social environment, which largely prohibits healthful activity.

In imaginative quality of the stories, the boys tend to specialize in both directions. Some boys are better and some worse than any of the girls.

In constructive unity of the stories the boys excel the girls. This may be due to greater richness of material in the case of the girls, but is probably due largely to greater constructive power possessed by the boys. This greater constructiveness seems to be connected with more rational modes of physical activity. No doubt the superiority is partly inherent, but the effect of environment must be great.

Where the boys offend against unity, their stories are panoramic. The girls are prone to write stories which are top-heavy. "Parturiunt montes, et gignitur ridiculus mus." They also spoil the unity of their stories by the insertion of irrelevant details.

Wherever the topic is interesting the subjects tend to write longer stories. That is, a certain heightening of the feeling tone tends to increase the amount of imaginative material ready to hand.

More religious, moral and social elements enter into the imaginative material of the girls. Clothes and the preparation of food appeal more to the girls, the consumption of food to the boys. Money appeals to the imagination of both sexes, but here the boys are more practical than the girls.

In general, the occurrence together of a certain type of physical activity, a certain type of emotional life, and a certain type of the imagination, seems to suggest some causal connection. At least the activity of the organism, as well as its inherent constitution, seems to determine the character of its interests, which in turn determine largely the form of the imagination. Perhaps these three aspects of the life of the individual are mutually interactive.

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PUPILS' VOLUNTARY READING.

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How much do pupils in the grammar grades and high school read voluntarily? Is there any relation between the amount and character of voluntary reading done and the character of school work done by the same pupils? Is the course in English as presented in the schools vitally related to the pupils' voluntary reading? To what extent is the public library a determining factor in the formation of a good reading habit? These and similar questions form the basis of this study. To secure data, questions were submitted to the pupils in all grades above the fifth in the schools of Iowa City, Cedar Rapids, and Council Bluffs. Answers were received from 915 boys and 1,284 girls.

The report may be considered under three heads, viz., (1) as to the quantity of reading done, (2) as to the quality of reading done, and (3) conclusions and suggestions for further studies.

I.

Quantity.

1. About how many books of your own selection have you read since last September? Do not include books which have been assigned for reading, but those which you have selected voluntarily.

2. Do you read the daily papers?

3. What magazines do you read?

The following table is an analysis of the answers to the first question, combining the results of the three schools.

Pupils in the three grades (sixth, seventh and eighth) below the high school read on an average 19% more than do the pupils in the high school. Reference to the table shows that the highest average is in the seventh and eighth grades, which is due principally to the fact that the above-average readers and the excessive readers are more numerous in these grades than in any others. For example, the number of pupils reading more than 15 books, or two books a month, take rank in the following order by grades:

Grade.	No. pupils examined.		Av. No. books per pupil.		Total average.	% of pupils reading more than 15 books.		% of pupils reading less than 8 books.		% of pupils reading no books.		% of pupils read from 8 to 15 books.	
	B.	G.	B.	G.		B.	G.	B.	G.	B.	G.	B.	G.
6	257	331	12.5	13	12.7	25	30	40	37	9	5	16	27
7	225	317	15.5	16.5	16	35	37	30	27	14	6	21	31
8	188	237	20	.16	18	46	41	30	34	5	5	19	20
9	119	144	14.5	12	13	25	26	40	40	11	5	24	29
10	49	116	11.5	13	12	20	28	45	38	8	3	27	31
11	44	77	13	13	13	20	27	40	40	14	6	26	27
12	33	62	15	10	12.5	45	31	36	42	0	8	19	19

Eighth grade, 43.5%; twelfth grade, 38%; seventh grade, 35.5%; sixth grade, 28%; ninth grade, 25.5%; tenth grade, 24%; eleventh grade, 23.5%.

The high percentage of twelfth grade pupils who were above-average readers is accounted for by the fact that, although there were practically no excessive readers in this grade, there were very few who were below average.

Out of a total of 22 pupils who reported having read one hundred books during the eight months, 2 were in the seventh and eighth grades, 2 in the sixth grade, 4 in the ninth grade, and one each in the tenth and eleventh grades.

33% of the pupils in the grammar school and 40% of those in the high school read less than one book a month.

11% of the grades and 7% of the high school read nothing that was not required.

The percentage of pupils reading from 8 to 15 books, or from 1 to 2 books a month is slightly greater in the high school than in the grammar school. These are the average readers and constitute from about a fifth to a fourth of all the pupils.

The transition from the elementary to the high school is marked by a drop from an average of 18 books in the eighth grade to 13 in the ninth grade.

A number of causes may be assigned for the decline in the amount of voluntary reading done after the pupil enters the high school, viz., the ideals of the high school are usually radically different from those of the elementary school: more reference is made to the library in connection with school studies: new subjects, as algebra and rhetoric are often introduced in the ninth grade and methods of teaching high school subjects are frequently of such a nature as to require much more time in the preparation of lessons than was required in the grades. When we consider the amount of reference made to the library

in the preparation of lessons in history and literature and the amount of collateral reading required by the English teachers it is quite probable that high school pupils read as much as seventh or eighth grade pupils.

If we compare the average amount of reading of boys with that of girls we find, on the whole, practically no difference. There is, however, a higher percentage both of excessive readers (those reading 40 or 50 to 100 books) and of delinquents (those reading no books), but a lower percentage of average readers among boys than among girls. 30% more boys than girls read excessively, and a proportionally large number read nothing voluntarily, while 23% of the boys and 20% of the girls read an average of 1 to 2 books a month.

Questions 2 and 3 refer to periodical reading. Fully 85% of all pupils, both boys and girls above the fifth grade, read the daily paper and quite as many read at least one magazine a month. The number of magazines increases noticeably from the sixth through the eighth grade where 50% of the pupils average 3 to 6 magazines a month. Above the eighth grade there is, at first, a slight decline and then a considerable increase. There is no noticeable difference between boys and girls with regard to quantity of periodical reading.

Data for studying the correlation between the number of books a pupil reads and the character of his school work was obtained from the register and from individual teachers. I compared the records of 85 pupils with their reports on reading and the result indicates practically no correlation between the amount of reading done and the character of school work. In a few cases fairly bright pupils were reported as doing poor school work at a time corresponding to a period of great reading.

"Excellent," "Good," "Medium," and "Poor" are equally distributed among the four groups of readers. If a pupil who reads little or nothing is graded good or excellent, one of two assumptions may be made, either that he is not interested in reading, or that his time and energy are all required to keep up his school work. Such cases should be studied individually and where proper incentives are wanting or opportunities insufficient these should be supplied. Pupils who read a great deal and are marked poor or medium form a variable class. A few may be educating themselves more truly than the school can do. Others are drifting in the current of aimless pastime and need the stimulus of sympathetic direction and inspiration. Only by studying individual cases can the problem be solved.

A comparison between pupils of the same grade and between boys and girls of the same and different grades shows two things, which will be of special interest to English teachers, and to all who attach a pedagogical significance to the study of

individual differences. The first of these is the wide variation among pupils of the same grade with regard to the amount of voluntary reading done. The second is the close correspondence (1) between the boys and girls of the same grade, and (2) between the different grades.

Some of the data which should be considered cannot be tabulated. For example, some of the answers given by the pupils are significant. Some say they have no idea how many books they have read. One boy in the seventh grade says that his mother limits him to three books a week. Others say, "I read everything I can get my hands on." There are many negative answers, as "I have read very few books because my parents do not allow me to read at home." "I started three books this year." "I have read few books because I like magazine stories better." A frequent answer from girls in the high school is that their school work takes so much of their time that they are able to do very little reading except what is assigned. A few answered that they read nothing while school was in session, but read considerable during vacations.

Quality.

4. Write the names of ten of those books which you like best, in the order of your preference. If you have not read ten, write the names of those you have read.

The following list includes all the books reported as "first choice" by 385 boys and 573 girls selected at random. This list, however, represents only about ¼ to ⅓ of the total number of times that a large percentage of these books were mentioned. For they were included in the selections of other pupils, though not as "first choice." Following is the list:

Grammar School—Books marked "first choice" by both boys and girls.

	Boys.	Girls.		Boys.	Girls.
Black Beauty	2	23	Brewster's Millions	1	2
Five Little Peppers	1	18	Graustark	1	2
Uncle Tom's Cabin	4	15	Hope Loring	1	2
Beautiful Joe	3	10	Lady of the Lake	1	2
The Virginian	4	3	Lorna Doone	1	2
Ben Blair	4	3	Ramona	1	2
Two Little Savages	4	3	The Bishop's Shadow	1	1
The Jungle Book	4	1	Bound to Rise	1	1
Little Shepherd of Kingdom Come	1	4	David Copperfield	1	1
Ben Hur	2	2	Editha's Burglar	1	1
Life of Washington	2	2	Little Lord Fauntleroy	1	1
Little Lame Prince	2	2	Man from Glengarry	1	1
Man on the Box	1	3	Oliver Twist	1	1
Robinson Crusoe	2	2	Toby Tyler	1	1
			Little Men	1	1

Books marked "first choice" by boys.

Call of the Wild (6), History of America (5), The Missing Tin Box (4), Thirty-one Years on the Plains (3), Treasure Island (3), A Young Volunteer in Cuba (3), With Lee in Virginia (3), Making the Nine (3), Redskin and Cowboy (3), Burnham Breaker (3), Sandy (2), Boys of '76 (2), Erie Train Boy (2), Out on the Pampas (2), Mysterious Island (2), Stanley's Through the Dark Continent (2), Trumpeter Fred (2), The Boat Club (2), Tom Sawyer (2), David Harum (2), Joe's Boys (1), Lucky Ned (1), Rip Van Winkle (1), Risen from the Ranks (1), Electrical Boy (1), Daniel Boone (1) Beauty and the Beast (1), Our Little Chinese Cousin (1), Little by Little (1), Bleak House (1), Lost Child (1), The Great Cattle Trail, Their Canoe Trip (1), Peck's Bad Boy (1), The Wreck of the Redbird (1), The Pathfinder (1), Life of McKinley (1), American Boy (1), A Trip Around the World (1), The Shadow of a Crime (1), Benjamin Barkley (1), The Silver Medal (1), Wit and Humor (1), The Spy (1), Huckleberry Finn (1), Frank Merril in Camp (1), Old Glory Series (1), Billy Redfoot (1), Young Acrobat (1), Baby Elton, Quarterback (1), The Telegraph Boy (1), Cruise of the Ghost (1), Minnetau the Apache Knight (1), At War with Pontiac (1), Tom Brown's School Days (1), Pioneers of the Great Wild West (1), The Philigree Ball (1), Sevenoaks (1), My Lady of the North (1), Trapped in his own Net (1), White Apron (1), From Throttle to President's Chair (1), Cab and Caboose (1), Napoleon and Blucher (1), King Richard (1), True to Himself (1), Picket's Gap (1), Japanese and Russian War (1), Hildegard (1), Lucky Walton (1), Slow but Sure (1), Heroes of the Navy (1), Cudjo's Cave (1), Merchant of Venice (1), Who Ought to Win (1), The Nick Carter books (1), English Orphans The Kingdom of Nature (1), Letters to Beany (1), King of the Bronchos (1), The Jersey Sky (1), Miss Lochinvar (1), Adventures of a Brownie (1), A Rock in the Baltic (1), Facing Death (1), Conquest of Mexico (1), Adventures of Sherlock Holmes (1), The Sea Wolf (1), Down the Mississippi (1), The Sketch Book (1), Scottish Chiefs (1), Captains Courageous (1), Aztec Treasure House (1), Remember the Alamo (1), The Dream of Empire (1), Bound for Annapolis (1), Captain Tom the Privateer (1), The Rider of the Black Horse (1), Wild West (1), The Dog Cruso (1), The Boy Trooper with Sheridan (1), Kidnapped (1), Belt of Seven Totems (1), Uncle Sam's Secrets (1), Sonny, A Christmas Guest (1), Junior Cup (1), Monarch, the big black Bear of Talic (1), Count of Monte Christo (1), Last of the Mohicans (1), The Story of a Bad Boy (1), Opie Read in the Ozarks

(1), The Blazed Trail (1), Stories of Inventors (1), The Valiant Runaways (1), A Star in Prison (1), Young Naval Commander (1), Little Colonel's House Party(1), Life of Kit Carson (1), Scalp Hunters (1), Ten Nights in a Bar Room (1), A Spy of the Civil War (1), Si Klegg and his Pard (1).

Books marked "first choice" by girls.

Little Women (16), Old Fashioned Girl (8), The Crisis (7), Mrs. Wiggs of the Cabbage Patch (6), Rebecca of Sunnybrook Farm (6), What Katy Did (4), Eight Cousins (3), Birds' Christmas Carol (3), Dog of Flanders (3), Gordon Keith (3), Nedra (3), Helen's Babies (3), Thelma (3), The Satinwood Box (3), Josephine (3), Dorothy Vernon (3), Lavender and Old Lace (3), Dotty Dimple books (2), Making Home Happy (2), Alice of Old Vincennes (2), Longfellow's Poems (2), Christmas Carol (2), Polly the New Fashioned Girl (2), The Cash Boy (2), Minute Boys of Lexington (2), Esther (2), Swiss Family Robinson (2), Cousin Maude (2), Deerslayer (2), When Knighthood was in Flower (2), Tom the Bootblack (2), The English Orphans (2), Jack and Gill (2), In the Palace of the King (2), The Lamplighter (2), Fanny Lightman's Choice (1), Nut Brown Joe (1), Three Revolutions (1), Palace Beautiful (1), Uncle Remus (1), The Blue Fairy Book (1), Book of Animals (1), Marjory and her Neighbors (1) His First and Last Appearance (1), Katrina (1), The Flight for the Valley (1), Hildegard's Holidays (1), Daddy Girl (1), Little Brown House (1), Boys of the Fort (1), A Self Raised Girl (1), The Story of Roland (1), Her Mother's Sin (1), Battle of the Glen (1), Tom Playfaire (1), Mozart (1), The Prince of Darkness (1), Our Helen (1), The Gypsy Series (1), High School Days of Harbortown (1), The Master's Violin (1), Nita Garland (1), Tom Sawyer (1), The Three Vassar Girls (1), Margaret (1), The Gentle Pioneer (1), The Princess (1), Nellie's Silver Mine (1), The Newspaper Boy (1), Faerie Queen (1), Zigzag Journeys (India) (1), Two of the Best (1), Janice Meredith (1), Alice in Wonderland (1), Sir Nigel (1), Les Miserables, (1), Birds and their Homes (1), The House with a Thousand Candles (1), Adventures of Sherlock Holmes (1), Stepping Heavenward (1), Dora Thorne (1), Rex and Fanny (1), Juliette (1), Won by Waiting (1), Two Little Waifs (1), Andersen's Fairy Tales (1), Nellie Rodney's Sorrow (1), The Prisoner of Zenda (1), Titus (1), Last Days of Pompeii (1), Ruby, the Heart of Gold (1), Bound in Honor (1), The Crossing (1), Man Without a Country (1), Hyperion (1), Two College Girls (1), The Wizard of Oz (1), Pilgrim's Progress (1), The War of the Redskins (1), Twice Told Tales (1), Neighbor Jackwood (1), Crooked Path (1), Lyndell Sherburne (1), Soldiers of Fortune (1), Life of McKinley (1), Marie An-

toinette (1), Second Thoughts (1), Old Curiosity Shop (1), The Days of Chivalry (1), Wild Animals I have Known (1), Richard Carvel (1), Lovey Mary (1), John Halifax (1), Not Like Other Girls (1), Daughters of the Sioux (1), Hiawatha (1), Mill on the Floss (1), Children of the Abbey (1), Ivanhoe (1), The Doll's House Party (1).

High School—Books marked "first choice" by both boys and girls.

	Boys.	Girls.		Boys.	Girls.
The Christian	2	15	The Prospector	3	1
The Virginian	3	13	Ivanhoe	2	2
Ben Hur	1	12	Richard Carvel	1	2
The Call of the Wild	9	3	Oliver Twist	1	2
David Copperfield	2	8	Man on the Box	1	2
Ben Blair	1	7	Black Rock	1	2
Graustark	3	5	Old Curiosity Shop	1	1
The Mill on the Floss	1	4	A Gentleman from India	1	1
Little Shepherd of Kingdom Come	3	2	Treasure Island	1	1

Books marked "first choice" by boys.

Last of the Mohicans (4), Frederick the Great (3), College Book on Football (2), Hiawatha (2), Kidnapped (2), Brewsster's Millions (2), The Clansman (2), Barnaby Rudge (2), The Craftsman (1), On the Cross (1), East Lynn (1), Huckleberry Finn (1), Life of Thomas Jefferson (1), Two Years Before the Mast (1), Man Without a Country (1), Merchant of Venice (1), Calumet K (1), Wild Animals I Have Known (1), In Defense of His Flag (1), In Old Virginia (1), Rob Roy (1), Two Little Savages (1), Paul Jones (1), General Grant's Memoirs (1), Autobiography of Benjamin Franklin (1), The Sage Brush Parson (1), The Spy (1), From Darkness into Light (1), Brace and Bold (1), A Journey to Australia (1), The Right of Way (1), Lamb's Tales from Shakespeare (1), Hearts Courageous (1), Robin Hood (1), Full Back (1), The Slavers of Old New York (1), Hon. Peter Sterling (1), Pickwick Papers (1), Self Help (1); How to Take Care of the Body (1), Quincy Adams Sawyer (1), The Jungle Book (1), Romeo and Juliet (1), Wonderful Wizard of Oz (1), By England's Aid (1), Winning His Way (1), The Silent Places (1), Harry Harding's Last Year (1), Gypsy Breynton (1), Life of Lincoln (1), Sesame and Lilies (1), Old Curiosity Shop (1), Essays of Elia (1), Beverly of Graustark (1), Hoosier Schoolmaster (1), Down the Ravine (1), The Deerslayer (1), A Tale of Two Cities (1), With Dewey in Manila (1), Captain Blake (1), Electricity for Everybody (1), Dr. Jekyl and Mr. Hyde

(1), Selections from Shakespeare (1), Cadet Days (1), Told in the Hills (1), Hearts and Hands (1), The Sea Wolf (1), Tom Brown's School Days (1), All Aboard (1), Lazarre (1), The Master of Electricity (1), The Boy Spy (1.)

Books marked "first choice" by girls.

Nedra (8), Lorna Doone (5), Ramona (4), Uncle Tom's Cabin (4), Last Days of Pompeii (4), Little Women (4), Castle Craneycrow (3), Lavender and Old Lace (3), Barriers Burned Away (3), Lamplighter (3), Lovey Mary (2), Rebecca of Sunnybrook Farm (2), In the Palace of the King (2), Little Minister (2), Colonel Carter of Cartersville (2), John Halifax (2), The Masquerader (2), English Orphans (2), The Vicar of Wakefield (2), Kenilworth (2), Jane Eyre (2), The Lady of the Lake (2), The Pit (1), West Point Colors (1), The Second Violin (1), Bob Burton (1), A Coral Ship (1), Elsie Dinsmore (1), Tales of a Traveler (1), Life of Washington (1), St. Elmo (1), Successors of Mary I (1), Sandy (1), Audrey (1), Ten Nights in a Bar Room (1), Rose in Bloom (1), A Daughter of the Rich (1), Lady Betty (1), St. Vedas (1), The Joy of Life (1), Land of Joy (1), Evangeline (1), Black Douglas (1), Stepping Heavenward (1), Old Glory Series (1), The Pirates (1), Sunset Pass (1), Silver Threads (1), Lyndell Sherburne (1), Princess Aline (1), The Blazed Trail (1), Tales of a Wayside Inn (1), The Witch's Head (1), Red Rock (1), A Genuine Lady (1), The Christian (1), Old Curiosity Shop (1,) Henty's books (1), Adam Bede (1), The Gambler (1), The Telegraph Boy (1), My Boys (1), Soldiers of Fortune (1), The Cost (1), Not Like Other Girls (1), Sherlock Holmes (1), Beside the Bonny Brier Bush (1), Sesame and Lilies (1), Do and Dare (1), The Day of the Dog (1), Donovan (1), Fortunes of Oliver Horne (1).

The above list shows only the general types of literature which pupils in all grades like to read best. In order to get the real status of their preference it is necessary to count each book or series of books as often as it occurs in all the lists. The following table includes the most popular of these books and series and the number of times each was chosen. By "series" is meant all the books of one author. In many series one or two books predominate, as Little Men and Little Women, David Copperfield, Black Rock, Mrs. Wiggs of the Cabbage Patch, and Graustark.

These books represent about 25% of the total number of selections made by the pupils in the grammar school, and about 20% of those made in the high school. They represent very fairly the types of books preferred by pupils in the grammar grades, but they do not represent all the types which are in favor among high school pupils. Those not mentioned in the

	Grammar School.		High School,	
	Boys.	Girls.	Boys.	Girls.
Alcott, Louisa M. Series	20	80	—	10
Alger, Horatio, Jr. Works	25	14	5	2
Blackmore, R. D. Lorna Doone	9	19	7	12
Burnett, Frances Hodgson. Works	8	23	—	1
Carroll, Lewis. Alice in Wonderland	12	28	5	—
Churchill, Winston. The Crisis	11	48	18	47
Clemens, Samuel L. Works	35	19	6	2
Connor, Ralph. Works	166	27	9	14
Defoe, Daniel. Robinson Crusoe	10	10	6	17
Dickens, Charles. Works	15	35	13	52
Finley, Martha. Elsie Dinsmore books	8	53	—	7
Fox, J., Jr. Little Shepherd of Kingdom-Come	10	39	15	49
Hemming, Bracebridge. Jack Harkaway books	31	393	1	5
Henty, G. A. Works	56	11	17	1
Hughes, Thomas. Tom Brown's School Days	16	7	6	6
London, Jack. The Call of the Wild	40	10	25	8
McCutcheon, George. Works	12	107	—	4
Otis, J. Toby Tyler	20	4	—	—
Rice, Alice Hegan. Works	40	29	—	—
Saunders, M. Beautiful Joe	31	64	—	—
Scott, Sir Walter. Works	11	12	—	1
Sewell, Anna. Black Beauty	81	118	1	1
Sidney, Margaret. The Five Little Pepper Series	18	110	4	29
Stevenson, Robert Louis. Treasure Island	45	90	6	7
Stowe, H. B. Uncle Tom's Cabin	11	23	20	32
Wallace, Lew. Ben Hur	6	15	10	12
Wister, Owen. The Virginian	11	23	20	32
Wyss, J. R. The Swiss Family Robinson,	22	23	—	—

table may be grouped into three general classes, viz. (1) Poetry. A surprisingly large number like Shakespeare and Tennyson. Many go to Longfellow and find special pleasure in Evangeline. Scott's Lady of the Lake is a splendid ninth-grade book, as evidenced by the pupils themselves. Poe and Whittier are also in very good standing. (2) History, biography and travel, or books that deal with facts about human interests and experiences. (3) Miscellaneous books, as stories of animals, books on astronomy and electricity, the Bible, books on football, and a large number of simple stories in which there is little or no plot.

5. Why do you like the book which you call "first choice" better than the others?

Many of the answers to this question were more or less indefinite, as "I liked so and so best because it was more interesting," or "I had no choice," or "I can't tell why I liked it best."

The following answers were taken at random from those which were more specific:

SIXTH GRADE.

F., 11. I liked "Little Women" better than the rest because it seems more natural.

M., 11. I like "Jack Harkaway" best because it is about the wild people.

M., 11. I like stories about bronchos best because I like to be with bronchos.

M., 12. I like "Miss Lochinvar" because it tells the truth.

M., 12. I like "A Young Volunteer in Cuba" best because it is a war story.

M., 12. I like "Black Beauty" best because it shows a man's kindness to a horse.

F., 10. I like "Land of Mo" because it could not be true.

F., 11. I like "Beautiful Joe" because I am interested in animals.

M., 12. I like the "Story of a Bad Boy" because it tells how boys do in real life and how much mischief they do.

M., 12. The "Life of Kit Carson" is my choice above all the others because it is so full of wild adventure.

SEVENTH GRADE.

F., 13. I like "Alice of Old Vincennes" best because it is so thrilling and Alice has such a lovely heroic character. It is written in such a good style of language.

F., 13. I like "Black Beauty" better than the others because it was more interesting, because it was so sad, and because it gave me an idea about how cruel some men were with horses and made me feel sorry for them.

M., 13. "Exploring the Isthmus" was the best because it was so exciting, interesting and humorous.

M., 15. I like "Pioneer Boys of the Great Wild West" because it explains the perils of settling a new country.

F., 12. I like "His First and Last Appearance" because it was sad.

M., 11. I like "The Missing Tin Box" because it is very exciting and a very good detective story.

M., 12. I like the "Jersey Spy" because the two boys did so much brave work.

F., 14. I like "Little Pilgrim's Progress" better than the others because of the adventures.

F., 14. The reason I liked "Wild Oats" was because there was a poor little boy who was bound to make his mark in the world.

F., 14. I like "Making Home Happy" because it teaches me something.

F., 13. I like "The Tone King" better than the others because it tells how great pieces of music came to be written and about the life of great musicians.

M., 13. I like "The Boys of '76" better than the others because it is history.

EIGHTH GRADE.

F., 14. I like "Ramona" best because there is a mystery and plot about it.

F., 15. I like "Little Women" best because it seems as if I were behind the door and hear everything. It seems so real.

F., 16. "I like "Graustark" because of the pluck and character of the man.

M., 16. I like Dickens work because he does not expose the plot so easily in the story as do most of the authors, and because he deals with a great number of characters.

M., 17. I like "In the Heart of the Rockies" better than the others, because it gives the life of the early West with all its adventures very clearly.

M., 15. I like the "Last of the Mohicans" because it gives a true idea of the Indian. It also contains the love of an Indian for his friends and his hatred which is so deep for his enemies that he will not give up until he has revenged his wrong.

M., 16. I like the "Call of the Wild" because it describes the ways of nature more than the others, and I like the ways of the dog.

F., 15. I like "Dog of Flanders" better than the others because it is such a sad book and the characters in the book are so lonely and poor yet so contented and honest.

M., 15. I like "Tom Brown at Rugby" because it is the kind of a story I like of a boy who does things just like other boys and has adventures at college just as any boy would have.

Ninth Grade.

M., 14. I liked the "Cornet of Horse" because it is a story of war and the adventures of a young man in the army.

M., 16. I have placed "Last of the Mohicans" first, not because I think it is the best book, but it seems to hold my interest to a higher point of excitement and expectation than the others mentioned.

M., 15. "Tom Sawyer" because it is humorous and suits a boy's description and actions.

M., 15. The "Virginian" because it shows such a fine character in the main subject.

M., 13. "The Boss" because it is a graphic account of a man in the graft of to-day.

F., 15. I like "Ben Hur" best because it appeals greatly to my imagination, was very interesting, and the moral side of the story was clear which last I always appreciate very much.

F., 16. "Lady of the Lake" gives one an idea of the Scotch many years ago. It also shows bravery in fighting the battles that they fought.

F., 17. I like the "Princess Aline" best for this reason: It keeps me in a curious state of mind until the climax is reached.

I like "Lavender and Old Lace" better than the others because it is a dainty story and contains so many beautiful thoughts and vivid descriptions. Then the author has made her characters enough different from each other, so that the reader is interested in each one.

F., 15. I liked the character of "John Halifax," because he had determination.

F., 15. I like "Black Rock" becanse it is written in so natural a way that it brings the reader into the scenes.

Tenth Grade.

F., 18. I like the "Master's Violin" because it is one of the sweetest stories I have ever read. The thoughts expressed are so beautiful and are expressed in a beautiful way.

M., 15. I like the "Virginian" because of the good description it gives of the West at that time, and the good character description.

M., 16. I like "Barnaby Rudge" because of its interesting plot and vivid description.

M., 15. I like Jack London's book (Call of the Wild) because of its excellent portrayal of human life and motives, of animal life and habits, of nature and his excellent descriptions. I think that I have never read a book that appealed to me as much and as strongly as this book. I have since read the "Sea Wolf" by the same author.

F., 16. I liked the "Story of the Other Wise Man" best because of the patience and endurance which it taught, and the beautiful descriptions and good use of words.

F., 16. I liked "Last Days of Pompeii" best because it gives any one a good idea of the sports which the Romans indulged in. It also gave a very fine description of an earthquake and a volcanic eruption. The characters are also well brought out, the blind girl especially. The book is written in a peculiar style as the persons addressed are called "thou."

F., 16. I liked the "House of Seven Gables" because it showed how the sins of one generation live in the following generation.

Eleventh Grade.

F., 15. "Sesame and Lilies" contains most beautiful sentiments with advice and suggestive thoughts enough to remain in mind forever.

F., 15. I prefer "Treasure Island" to the rest of the books I have read because the interest is kept up throughout the story and the plan of the story is good.

M., 15. I liked "With Dewey in Manila" because it was full of adventure and was patriotic. It was also humorous.

M., 16. "Cadet Boys" because there is always "something doing."

M., 17. The description in the book entitled "The Fair God" is beautiful. The ground for the combat, the building on which the God of the air was, the secret chambers, etc., are described to full extent. The characters are brought out well. They are brought into action so that it makes the reader very excited. The book as a whole keeps the reader in a state of wondering.

M., 15. I like "Astronomy for Amateurs" best because it is graphic, instructive, intensely interesting, and simple enough for me to understand.

F., 16. I like "Life of Raphael" best because I have seen a number of his paintings and it is interesting to know how he came to paint them, and all the circumstances surrounding them. It was also a pleasure to learn of the character and traits of Raphael, for I never knew much about his life before. The book is written in an interesting way, combining description and narration in such a way as to avoid monotony.

Twelfth Grade.

M., 17. "Return of Sherlock Holmes" shows more excitement and draws more interest.

M., 18. "Beverly of Graustark" because it has more exciting adventure in it and more vivid romance.

F., 18. "Old Curiosity Shop" because of the delineation of character.

F., 19. "Sesame and Lilies" broadens our ideas and, if read with care, there are passages which one will never forget. "Lucile" is one of my favorite stories in poetry.

F., 16. Cooper's works because of the vivid descriptive parts and historical facts learned from them.

F., 16. I like "Adam Bede" because it is interesting all the way through. The facts of the story follow one right after the other. It is sad and pathetic which appeals to people.

F., 16. I like biographies because they seem more real. I can feel that they are true and that people have really gone through these things.

F., 17. I don't know exactly why, but when I want something to read, I always read Marmion. I have read it several times. The book which I first read it from was illustrated and it gave scenes and landscapes with the titles of different expressions used in the story. I could understand it so much better and picture it out to myself.

F., 18. For some reason I can't explain, the "Lady of the Lake" has some fascination for me ever since I first read it. It was read to me when a child about twelve. Since then I have read it three or four times.

The answers tend to indicate an agreement between the motives which prompt voluntary reading and different stages in the development of the child's instincts. Adventure is the leading motive in the grades below the high school. Later this crude instinct for nature is followed by the beginning of an appreciation of beauty and sentiment as represented in descriptions of nature, in forms of expression, and in the analysis of character. Humor and pathos and the higher virtues expressed in concrete form, as kindness, sympathy, courage, pluck, and honesty are strong motives of preference in the grammar school. In the high school the reading motive is less specific. This lack of definiteness may be due to the character of voluntary reading. Much of the literature read by the high school pupils consists of light popular fiction which may be characterized as "crude narrative, entirely lacking in literary style, or spirit or purpose." There is little doubt that many pupils read too much and with no motive save pastime. But there is a hopeful tendency even in the type of reading that this class do. The public library, cheap publications of standard authors, the short story magazine, and a score of clean writers for boys and girls have superseded the yellow back, blood and thunder type of literature for all save the most sensuous.

Periodical reading consisted almost wholly of the cheap or popular magazine. In the sixth and seventh grades St. Nicholas and Youth's Companion prevail, while in the upper grammar and high school McClure, Cosmopolitan, Everybody's, The Red Book, Outing, Tip Top Weekly, and others of this type lead. The heavier types, as The Century, the Chautauquan, Harper's, and the Scientific American were not wholly excluded, but were not often mentioned. This may be attributed to the fact that relatively few of the latter class of higher priced magazines are found in a majority of the homes.

III.

Conclusion.

The importance of early forming a good reading habit can hardly be overestimated. Few other habits formed in school will operate more powerfully to influence the permanent conduct of the child than the habit of selective reading. It should be the chief aim of the English course to lay the foundation deep in the nature of the child for a permanent taste for the best in literature. It should be recognized that there are individual differences in matters of literary taste, and these differences should form the basis of instruction in English as in mathematics and science. It is a significant fact, and one that should be more often recognized by teachers and parents, that books appeal to children only in so far as they are translated into their own real experience. Hence there should be a close relation between the pupil's voluntary reading and the English, and especially so in the high school. In other words the course in English ought to take its departure from the pupils' point of view. This would mean that, while Shakespeare, Milton, Burke, and Coleridge would still be read by most of the class and studied by a few, whose maturity, previous training, and environment has given them an apperceptive complex sufficient to appreciate the significance of these works, there would also be works by Henty, Stevenson, Ellis, Scott, Dickens, Alice Hegan Rice, Longfellow and a score of others so as to appeal to the various types of life and instinct found in the high school.

Curricula and courses in English will not alone produce desirable results. Much effort that is lost might be turned to good account if all teachers were more sympathetic in their methods of directing pupils' reading. To tell a pupil to read a certain book often inhibits the desire to read even a very desirable book. A necessary prerequisite for intelligent and sympathetic direction in the matter of reading is a discriminating knowledge of books and a thorough acquaintance with the psychology of childhood and adolescence. And teachers who would assume this important and difficult task must be fitted by nature and training for this very special duty.

In concluding I will suggest three lines along which the school should endeavor to improve voluntary reading. These are:

(1) That some definite plan of co-operation between teachers and pupils be organized whereby teachers may become acquainted with the reading habits of individual pupils and be able more efficiently to minister to their needs.

(2) That the school be more vitally related to the public

library by co-operating with the librarian to aid pupils in selecting books. A plan similar to this is already in vogue in some places.

(3) That types of mental character and attitude as revealed in the quality of voluntary reading, should be carefully studied and the results correlated with the quality of school work accomplished, in order to aid both teacher and pupil to adjust the work of the school to the needs of the latter.

A STUDY OF MEDIÆVAL SCHOOLS AND SCHOOLWORK.

By L. F. Anderson, Fellow in Education, Clark University.

The Unfavorable Culture Conditions.

The political and social conditions in Western Europe after the downfall of the Roman empire were highly unfavorable to intellectual culture and to the schoolwork which fostered and disseminated it. As states fell, with them fell also all guarantee of the security of life and property and men were too intent upon the very maintenance of existence itself to be able to devote time or effort to the pursuit of culture. The dominant barbarians had naturally no appreciation of, or regard for, the literary and scholastic interests that were the final product of over a thousand years of Greek and Roman civilization. The schools of grammar and rhetoric ceased to exist in Gaul in the sixth century. Society relapsed into a condition of barbarism. Even elementary schools were no longer necessary for the mass of the people.

How Culture Survived.

That across this period of barbarism and confusion the essentials of Græco-Roman culture have been preserved and with them the traditions of the Græco-Roman schools is due largely to the Christian church. For in the general ruin of the appurtenances of Roman civilization the church was one great institution to survive. Not only did it survive, but it inherited much of the power and prestige of the empire. The excesses into which the barbarians were plunged on finding themselves masters of the wealth and luxury of the effete Roman provincials were checked in Gaul as elsewhere on the one hand by the powerful appeals which the Christian Church made to their fear of the supernatural (Lavisse, Revue d. Deux Mondes, March 15, 1886, p. 366), and on the other by the examples of austere living afforded them by the monks, especially the missionary monks from Ireland. Hence, just as Greece had taken captive her rude Roman conqueror so Christianity, particularly as preached and practised by the monks, took captive the pagan Teutonic masters of Rome.

It is an important fact in the history of the non-professional school that the Christian church, notwithstanding its tendency toward other-worldliness and asceticism, was yet unable to

dispense with Roman culture. Even so ardent an enemy of paganism as Tertullian acknowledged this. (De Idolatr. c. 10.) The position of the clergy as the religious leaders of the people necessitated on their part a knowledge of the doctrines of Christianity as contained in the Scriptures, the writings of the Fathers, and the decrees of the Church. And an intelligent knowledge of these was impossible without some acquaintance with the elements of that culture amidst which they had developed and with which they were permeated. The mere performance of the routine duties of the priestly office necessitated ability to read, some knowledge of music, and at least such knowledge of arithmetic and astronomy as would enable them to determine the date of the various holy days. Furthermore, it should be noted that Latin, the language of the church, was for almost all a difficult foreign tongue to be mastered only through arduous and protracted labor. On the other hand once mastered the way lay open to the accumulated stores of ancient classical culture. Cassiodorus, in the following passage, states clearly not only the need of the clergy for the traditional secular learning of the Romans, but their attitude toward it. "Nor did the holy fathers decree that the study of secular letters was to be rejected *since our minds must be instructed to the understanding of the sacred scriptures.* . . . . Many again of our fathers versed in literature of this sort and penetrating into the law of God, arrived at true wisdom. So the blessed Augustine notes in the book on Christian doctrine: 'We do not take into consideration with how much gold and silver and raiment Cyprian, the amiable teacher and the blessed martyr was adorned when he came up out of Egypt;[1] with how much were Lactantius, Victorinus, Optatus, Hilarius' (we add Ambrose and Augustine himself and Jerome and many other Greek scholars, too numerous to mention)." (Multosque alios innumerabiles Græcos.) (Divin. Lect. chap. 28.)

While the storms of invasion and war brought Roman civilization in the centre of the empire to the verge of annihilation, the ancient classical learning was still cultivated in the extreme eastern and western parts, which remained relatively undisturbed. From the East something of this learning was brought back during the early mediæval period by individual scholars such as Theodore of Tarsus, later through the spread of the Mohammedan conquests and through the movements inaugurated by the Crusades. But learning and Christian enthusiasm were first brought back to Gaul and central Europe from Ireland, their refuge in the far West. It was probably at Tours, and while Gaul was still the chief home of Roman

[1] That is, how much pagan learning he had acquired.

culture, that St. Patrick acquired that knowledge of Christian doctrine and of classical learning which he bore to Ireland. (Dict. Nat. Biog., Vol. 44, p. 39, Woodhouse, Monasticism, p. 65, Sandys, Hist. of Classical Scholarship, p. 438.) In this island, sheltered from the turmoil that accompanied the first period of barbarian rule in Britain and on the continent, Christian and classical learning flourished vigorously, while elsewhere in Western Europe civilization went rapidly backward. (Poole, Illustrations of the History of Mediæval Thought, pp. 11-12.) From this western refuge eager missionaries carried back to England and the continent, in the 6th and 7th centuries, a contagious enthusiasm for learning and Christianity. In 563, Columba, an eminent Iro-Scottish (for Ireland was at this time the home of the Scots) religious leader established the monastery of Iona among the Picts of what is now called Scotland. Some sixty of seventy years afterward, Aidan, a member of this monastery, was sent as missionary to the English of Northumbria, among whom he founded the cathedral monastery of Lindisfarne. Irish monks seem to have penetrated here and there into other parts of England. Aldhelm received his earliest instruction from an Irish scholar, Maidulf, who established himself in the wilds of Wiltshire.

Reforms in Monastic Life Favorable to Learning.

Meanwhile monastic life had been undergoing reforms which made it a more efficient factor in the transmission of culture. The extreme asceticism and the want of reasonable regulation in the life of the earliest monasteries had hampered their efficiency and had proven particularly unsuited to the manners and customs of the West. St. Benedict, in establishing his monastery at Monte Cassino, drew up a rule so practical and effective that it was rapidly and widely adopted, and infused everywhere monastic life with renewed vigor and usefulness. The Rule divided the waking hours between manual labor, reading, and worship. Chapter 38 appoints reading during meals. Chapter 42 appoints the public reading of some edifying book daily before evensong. In chapter 48 it is enjoined that three hours in the morning and three in the afternoon be devoted to manual labor and two hours to reading. Chapter 59 states that children may be given to the monastery. The requirement of daily reading and the reception of children necessitated systematic instruction and prepared the way for the development of monastic schools.

An even greater impetus was given to the educational influence of monastic life by Cassiodorus, a Roman of noble family who, after a long and successful career as minister of state under Theodoric and his successors, retired about 539 to the

monastery which he had erected upon his estate at Viviers, in Calabria. One of the last to receive a lay education of the Roman type, he had been for some time intensely interested in raising the standard of Christian theological education. (De Inst. Div. Scrip. I, Præf.: Hodgkin, Letters of Cassiodorus, p. 56.) Upon retiring, at the age of 70, to his monastery, he incited his monks to study and employed them in transcribing not only the writings of the church fathers, but those of the classical Latin and Greek authors. It is largely because of the activity thus inaugurated that the monasteries have been enabled to preserve to us so much of the classical literature. Cassiodorus, himself, led the way, transcribing with his own hand the psalter, the prophets and the epistles. Perhaps the most important of his contributions to the cause of education consists in the fact that he made the monasteries the bearers to the future of that pagan learning which Cassian so abhorred. (Specht, 43.) One of the indications of the arrested growth and the incipient decline of learning was the tendency to make digests of the content of the school curriculum. (Comparetti, Vergil in the Middle Ages, pp. 50-51.) One of these by Martianus Capella, a pagan scholar of Northwestern Africa, epitomized learning under seven heads. Now Cassiodorus, in order to encourage learning among his monks, composed for their use not only a treatise on the scriptures but a compendium of secular learning. He notes the mystic significance of the fact that it consists of seven subjects, three preparatory subjects of a literary character, grammar, rhetoric and dialectic, afterwards called the trivium, and four more advanced subjects of a scientific character, arithmetic, geometry, music and astronomy, which make up the quadrivium. The trivium and quadrivium were almost universally accepted throughout the middle ages as the standard course preparatory (we must not forget that the schools of this period were primarily professional religious schools) to the study of theology.

Continuity of Roman School Tradition Through the Middle Ages.

Though Græco-Roman culture exerted an influence upon mediæval schoolwork through many other channels, this fact enables us to trace a continuity in school curricula from the Roman period through the 'Dark Ages' to the Renaissance when the interest in the literary studies of the early schools of Athens and Rome revived. Thus we may say that "The old pagan learning was never destroyed, notwithstanding the complete victory of Christianity." (Parker, Hist. Review, V, 456.) Much of the credit for this may be ascribed to Cassiodorus. (Sandys, Hist. Classical Schol., 253.)

The reforms in the life of the cathedral which did so much to raise the status of the cathedral school as an educational factor were brought about in the middle of the 8th century.

ESTABLISHMENT OF MONASTIC CENTRES OF LEARNING.

The work of the Irish monks in the North of England was powerfully supplemented by that of Roman missionaries in the South. The cathedral school at Canterbury, established probably by Augustine near the beginning of the 7th century (Leach, Early York. Schools, I, VIII), became a great centre of learning on the advent as Archbishop of Canterbury of Theodore, a learned Greek of Tarsus, in 668. Of the work of Theodore, and his able and learned coadjutor, the African monk Hadrian, Baeda writes, "Forasmuch as both of these were well read both in sacred and in secular literature, they gathered a crowd of disciples and there flowed from them rivers of knowledge to water the hearts of their hearers; and together with the books of Holy Writ, they also taught them the arts of ecclesiastical poetry, astronomy and arithmetic. A testimony of which is, that there are still living at this day some of their scholars who are as well versed in the Greek and Latin tongues as in their own. Nor were there ever happier times since the English came into Britain." (Eccl. Hist. IV, c. 2.) To Canterbury came from the Irish school at Lindisfarne, Wilfrid, who is probably the founder of the famous cathedral school at York. (Leach, York. Schools I, VIII.) Here studied, also, Aldhelm, the founder of the monastery at Malmesbury. Another pupil, Benedict Biscop, an Anglian noble, founded at Wearmouth and Yarrow, the twin monasteries in which lived and taught, Baeda, perhaps the most eminent scholar of his day. From these and other English schools went forth missionary scholars who, together with the Irish monks, bore back to the continent the classical learning and the religious enthusiasm which had there become almost extinct. Possibly the greatest of these was Boniface, who, in the 8th century, founded several monasteries, all under the Benedictine rule. Of these, Fritzlar, Fulda and Bischofsheim, became the seats of famous schools. (Specht, Gesch. d. Unt., p. 11.) Columban, an Irish scholar, (Columban not to be confused with Columba, the founder of Iona) established the monasteries of Luxieul and Fontain in Burgundy and of Bobbio in Italy. One of his disciples, Gallus, founded near Lake Constance the monastery afterwards named St. Gall, which became, perhaps, the most famous of all in the history of mediæval learning and literature.

It was, perhaps, under the influence of the educational reforms inaugurated by the Anglo-Saxon monks, that Chrode-

gang, of Metz, increased the educational efficiency of his cathedral clergy by placing them under a monastic rule. (See p. 227.)

Revival of Learning Under Charlemagne.

The first revival of learning on the continent was due, however, to the genius and energy of Charles the Great. With the end in view, no doubt, of creating a spirit of national unity in his heterogeneous empire through the dissemination of religion and of culture, he made vigorous efforts to raise the standard of learning among the aristocracy, and particularly among the clergy. The Benedictine rule was introduced into all monasteries that had not already adopted it. The example of Chrodegang, of Metz, was everywhere followed in the monastic organization of the cathedral clergy. Eminent scholars were attracted to the imperial court. The 'Schola Palatina,' indispensable even under the Merovingians, as a means of training secretaries and court officials in Latin, now assumed the dignity of a centre of learning. Charles, himself, set the example, studying grammar under Peter, of Pisa, and rhetoric, dialectic, and particularly astronomy, under Alcuin (Einhard, Life of Charles the Great, c. 25) who had been induced to give up his chair at the great school at York, and had been placed at the head of the palace school. Important offices in church and state were used as rewards to those most proficient in learning. Imperial letters were issued exhorting the clergy to greater diligence in acquiring and imparting knowledge. The following is an extract:—"During past years we have often received letters from different monasteries, expressed in uncouth language. Hence there has arisen in our minds the fear lest, if the skill to write rightly were thus lacking, so too would the power of rightly comprehending the sacred Scriptures be far less than was fitting:—and we all know that though verbal errors be dangerous, errors of the understanding are yet more so. We exhort you, therefore, not only not to neglect the study of letters, but to apply yourselves thereto with perseverance and with that humility which is well pleasing to God; so that you may be able to penetrate with greater ease and certainty the mysteries of the Holy Scriptures—Let there, therefore, be chosen for this work men who are both able and willing to learn, and also desirous of instructing others; and let them apply themselves to the work with a zeal equalling the earnestness with which we recommend it to them." (Mullinger, 98-99.)

To add to the hindrances to learning, the Saracen occupation of Egypt had shut off the supply of papyrus. Books, in consequence, became still more rare and costly. The prevail-

ing ignorance of the monkish copyists led them to make numerous errors. Still more serious errors arose from their attempts to restore passages that had been defaced. In order to remedy this evil, Charles sent around to the churches a copy of a collection of homilies that had been corrected by Paulus Diaconus. The letter accompanying the book contains a clear and brief statement of Charles' educational aims. "Desirous as we are of improving the condition of the churches, we impose upon ourselves the task of reviving with the utmost zeal the study of letters well nigh extinguished through the neglect of our ancestors. We charge all our subjects, as far as they may be able, to cultivate the liberal arts, and we set them the example." (Mullinger, *ibid.*, 101.)

Although the impulse which Charles thus gave to learning died away amidst the wars and political confusion which followed his death, his efforts did not come to naught. A succession of eminent teachers and scholars can be traced from Alcuin through his pupil, Hrabanus Maurus, under whom the monastic school of Fulda became famous, through Servatus Lupus (805-862), Eric of Auxerre (834-881), Remy of Auxerre, who taught at Paris at close of 9th century, and Odo of Cluny (880-942), to the time when conditions once more became favorable to the development and spread of learning. (West, Alcuin, p. 176.)

Revival of Learning in England Under Alfred.

At the same time that school work was being vigorously promoted by Charles the Great, the ravages of the Danes, which were to bring civilization in England to the verge of extinction had already begun. When, in 880, peace was restored through the genius of Alfred the Great, one of his first cares was to raise the clergy and the people from the barbarism and ignorance into which they had relapsed. Inspired and guided by the example of the great Charles, he issued letters to the clergy urging them to greater zeal in study and in teaching. Not only was he, himself, an ardent student of the literature and science of his time, but he set about translating into the language of the people the books which he considered most necessary for them. Like Charles, he surrounded himself with learned men and established a school for the young nobles at his court. This institution, though it does not seem to have maintained its existence, is important in the history of English education because, first, it may be considered as marking the beginning of a state educational policy, and secondly, it was probably the first school established in England primarily for the education of the laity.

The restoration of the monastic schools, almost wholly de-

stroyed in the Danish invasions, began with the foundation of Glastonbury, by Dunstan. But England seems to have shared in the general decline of learning which characterizes the tenth century, the culminating period of the so-called 'Dark Ages.'

The Aim of Mediæval Schoolwork.

The general non-professional school, the history of which is outlined in these pages, seems to have had an independent existence during the early middle ages only in Italy, where the Roman secular schools of grammar and the liberal arts do not seem to have altogether died out. (Giesebrecht, De litterarum studiis apud Italos primis medii ævi saeculis. Berlin, 1845, p. 8; Kaufmann, Geschichte d. deutschen Universitaten, I, 119; Rashdall, Universities of Europe, I, p. 92.) Throughout the rest of Western Europe there were only the church and monastic schools, the aims of which were far different from those of lay schools of the liberal arts. In the first place they were established to give not a liberal education that would fit for membership in cultured society, but to give that theological, professional instruction and training needed by the monks and the secular clergy. The educational function of the church schools was primarily religious and moral rather than intellectual or æsthetic. Moreover, the other-worldliness which characterized the religious life of this period was diametrically opposed to that interest in human life and its environment which is the mainspring of all cultural activity. (Poole, Illustrations of Hist. of Med. Thought, pp. 6-9.) Even in the passage quoted from Cassiodorus, p. 224, it is to be noted that the study of pagan culture is by no means advocated with enthusiasm, or for its own sake, but as a necessary preparation for the study of the scriptures.

Yet, as has been pointed out above, some measure of the school learning of the Romans was absolutely essential as a propædeutic to what later became the great central subject of theology and as a preparation for the professional duties of clerical and monastic life. (Pertz, Leges I, pp. 52-53. Rashdall, *op. cit.*, I, p. 33.)

Olaus Magnus, in a description of the schoolwork of even the 15th and 16th centuries in Scandinavia, writes, "Those that are sent to school are sent with this intention that with God's aid they may become clergymen." (Historia delle genti . . . settentrionali, p. 189.)

Though the schools of this period may be divided so far as their external connections are concerned into monastic, cathedral, parish and other classes of schools, they all gave instruction in more or less of the same fixed course of study, and this was nothing else than the course followed in the later pagan

schools of Rome, and which had there already become so fossilized as to be capable of being set forth in such a cyclopædia as that of the pagan writer, Martianus Capella. A Bavarian synod of the 8th century speaks of instruction being given in the ecclesiastical schools of the time, "according to the traditions of the Romans." (Synodus Nivhingana, a. 774. In Westenrieders Beiträgen zur vaterländ. Historie, München, 1788, I, 26; Specht, p. 81.)

In an atmosphere so unfavorable to purely secular learning as that of these professional religious schools, even a fresh and vigorous literary and scientific culture would find little opportunity for growth. As it was, the culture embodied in the seven liberal arts remained "like a substance in suspension in a medium incapable of absorbing it, and sank in a mass to the bottom. In itself it remained unchanged throughout the whole period; it was so much dead matter passed from hand to hand and was only modified by the rough and unskillful treatment it experienced during the process." (Comparetti, Vergil in the Middle Ages, pp. 77-78.)

The Mediæval Course of Study.

Though in its external form the Roman course in the seven liberal arts was maintained throughout the mediæval period the professional needs of the churchmen, who were instructed in it, inevitably modified its contents. A prime requisite in clerical training was the ability to conduct, or at least to participate in the church services. The instruction immediately essential to this was given in an elementary course preceding the course in the trivium, which included usually the following subjects:

Elementary Instruction.

Reading was taught by the alphabetic method. After preliminary exercises with the pronunciation of letters, syllables and single words, the reading in the psalter was taken up. (Othloni, liber de censu spirituali, c. 9. Pez., Thes. Anecdt. III, 2, 299. Specht., pp. 68.)

Careful attention was paid to clear enunciation and correct accent. The Latin psalms thus gone over were then committed to memory. (Waltheri Spirens, Vita S. Christophori lib. I, de studio, v. 12-15 ed. Harster, Munchen, 1878, p. 16; Specht, 68.) Inasmuch as Latin was still an unknown tongue to the beginner, this reading and memorizing was entirely devoid of thought content. St. Gregory, Abbot of St. Martin at Utrecht, read so well at the age of 14 as to win the praise of St. Boniface, yet he was unable to understand what he read. (Vita, S. Gregorii, c. 3, Mab. Act, SS. III, 2, 291. Specht,

69.) Even Chaucer's little chorister (see the Prioresses Tale, ll. 64-98. De Montmorency, State Int., p. 186) did not understand the words of the Latin hymn which he learned with so much pains. The fact that Charlemagne found it necessary to order that in the examination of priests and monks they should show themselves capable of changing the wording of the masses for the living and the dead, as circumstances required, from singular to plural or masculine to feminine indicates that some of the clergy never acquired the ability to understand Latin.

The first exercises in *writing* were taken up along with the exercises in reading. Wax tablets were used at first, and later, pen, ink and parchment. In an age when all books were manuscript, writing naturally became one of the important industrial and fine arts. Students sometimes copied their own books and some of the more skillful became professional copyists.

Music, which was so important an element in the services of the church, demanded early and careful attention in the clerical course of study. With the exception of grammar no subject made such great demands upon the time and the energies of the pupils. The Gregorian chant was generally adopted and in the time of Charlemagne, as at present, was the subject of numerous capitularies. The notation, consisting of little strokes, hooks and points above the text, was not only complicated but indefinite. While the musical training essential to the performance of the church services was one of the chief ends of elementary instruction, the more scientific study of music ranked as one of the most important disciplines of the quadrivium.

Another subject which had a place both in the elementary course and in the quadrivium, was *arithmetic*. Like music, it owed its place in the elementary course to the fact that it was indispensable in the professional training of the clergy, for every priest must be able to determine the dates of the holy days of the year. Charlemagne's Capitulary of 789 (Mon. Ger. Leg. Sect. II, Capit. Reg. France, I, 60, c. 8, p. 235. Specht, 128) requires every churchman to be able to fix the order of the church holidays and to arrange the calendar for the year.

The methods were apparently those that had been employed by the Romans. The work began with exercises in counting and in the *representation of the numbers* with the fingers. The most useful facts connected with the four fundamental operations were fixed in the mind through drill. There was little written calculation. With the clumsy Roman notation it was usually more convenient to use the fingers than the written

symbol. (Günther, Geschichte des Mathematischen Unterrichts, pp. 89.)

In this elementary course a beginning was made in the use of *Latin* in conversation, the Latin equivalents of frequently used words and expressions were learned. Through collecting these the students made vocabularies and conversation books for themselves. In connection with this work some books curiously resembling some of our latest attempts in the writing of texts in modern languages have come down to us. One by Alexander Neckam, in the twelfth century, gives in Latin, with an interlinear gloss in Old French, a description of the various parts of a house, of the different occupations of men, and so on. Another, by Alfric, a priest, gives inAnglo-Saxon and Latin, a series of informal conversations between the teacher and pupils upon the more interesting features of their ordinary surroundings. (Hazlitt. Schools, School-books and School masters, p. 30-33.)

In connection with these exercises the more fundamental of the elements of grammar were studied, the parts of speech, the declensions and the conjugations.

In many instances, particularly up to the eleventh century, the elementary course sketched above constituted the whole of the non-theological training for an ecclesiastical career. (Specht, 78-80.) Indeed, this fact seems to have determined the character of the course, for it is not so much a propædeutic to the seven Liberal Arts as it is a grouping together of those subjects, some knowledge of which was considered absolutely essential to the performance of the clerical functions. In the life of the Abbot John of Gorze, who lived in the tenth century, a detailed account of a theological course of the time is given as follows: 1. Elements of grammar and the first part of Donatus. 2. Repeated reading of new and old testaments. 3. Mass prayers. 4. Rules of church time reckoning. 5. Decrees of the church councils. 6. Rules of penance. 7. Prescriptions for church service. 8. Worldly laws. 9. Collection of homilies. 10. Tractates on the epistles and gospels. 11. Lives of the saints. 12. Church music. (Vita S. Joannis abb. Gorziens, c. 13, c. 18, Pertz, M. G. SS. IV, 340, 342. Specht, p. 64.) It will be noted that this includes little more of secular instruction than the elementary course which has just been outlined.

Differences Between the Work of Different Schools.

Though everywhere the course of study, whether partial or complete, conformed to the same general plan of an elementary course followed by the trivium and quadrivium, yet among

the different schools the greatest variety prevailed. In some instances, as has just been noted, the work was limited to those studies absolutely indispensable for church service. In many little was attempted beyond the trivium. In others a relatively great amount of attention would be paid to certain of the subjects of the quadrivium. In one school would be a famous grammarian, in another a famous dialectician or exegete. Seldom did a school possess eminent teachers in all subjects. Hence arose the custom among the more zealous and talented students of travelling from one school to another. (Specht, 193-194.) This custom survives in the German Universities of to-day. Students of especial talent, or occasionally even teachers, received grants from the funds of the cathedral or monastery in order that they might study at some of the greater centres of learning. (Specht, 194.) The travelling fellowship is not, therefore, a purely modern institution.

The Trivium.

As a rule grammar, rhetoric and dialectic, the literary subjects of the trivium, preceded the more mathematical and scientific studies of the quadrivium, namely arithmetic, geometry, music and astronomy. There was little uniformity as to the order in which the subjects within these classes were taken up, except that grammar, of necessity, came first.

Grammar.

The fact that these subjects were all to be studied in Latin, and that Latin was the language of the Church, gave to grammar the first place in the curriclum, first not only in order of time but in order of *importance*. Among the Romans grammar included literature (Victorinus in Keil. Gramm. Lat. VI, p. 4) and the term retained this meaning throughout the middle ages. But although the mediæval course in grammar involved the reading of the poets, the fact that the language was no longer native, but foreign, and the necessity of mastering it as a means of expression, together with the narrow religious spirit of the times so unfavorable to literary culture, brought it about that the work became almost exclusively grammatical in the narrow modern sense of the term. There was little appreciation of the literary excellence of the poems read. They were prized rather as containing exemplifications of the rules of grammar. To the mediæval scholar, however, the importance of grammar rested upon the fact that it opened the way into the world of learning in those times so difficult of access. In the Glosa notabilis to the Doctrinale grammar is defined, ostensibly according to Isidore, as "The doorkeeper of all the other sciences, the apt expurgatrix of the stammering tongue,

the servant of logic, the mistress of rhetoric, the interpreter of theology, the relief of medicine (medicinæ refrigerium), and the praiseworthy foundation of the whole quadrivium. (Mon. Germ. Pad., Vol. 12, p. IV.)[1] In a legal document conveying at the close of the mediæval period the Grammar School of Manchester to twelve trustees, it is stated that "the liberal science or art of grammar is the ground and fountain for all other liberal sciences, which source and spring out of the same, without which science cannot perfectly be had, for the science of grammar is the gate by the which all other been learned and known in diversity of tongues and speeches." (Carlisle, Grammar Schools, I, 673.) To such an extent did this subject predominate that our intermediate schools are still called "Grammar Schools."

"A need for Latin," says Leach, in discussing mediæval school work (Eng. Schools of the Reformation, p. 105), "was not confined to the church and the priest. The diplomatist, the lawyer, the civil servant, the physician, the naturalist, the philosopher" (Leach seems to overlook the fact that these were largely of the clergy) "wrote, read, and to a large extent perhaps thought in Latin. Nor was Latin only the language of the higher professions. A merchant, or the bailiff of a manor wanted it for his accounts; every town clerk or guild clerk wanted it for his minute book. Columbus had to study for his voyages in Latin; the general had to study tactics in it. The architect, the musician, every one who was neither a mere soldier or a mere handicraftsman, wanted, not a smattering of grammar, but a living acquaintance with the tongue, as a spoken as well as a written language."

In the study of grammar the mediæval student was brought into a hand-to-hand struggle with Latin, which was not only the barrier which separated him from the learning of his time, but was the difficult language in which as a scholar and as a churchman he must learn to express himself.[2] These ends, and particularly the latter, outweighed all others. To them all literary studies were entirely subordinated. Hence the line between grammar and rhetoric does not seem to be clearly drawn. Cassiodorus defines the former as "The beautiful art (peritia pulchra) of speaking derived from the illustrious poets and orators. Its function is that of composing correctly prose and verse (sine vitio dictionem prosalem, metricamque com-

[1] See also Athalaric's panegyric on grammar in Cassiodorus, Variorum, Lib. IX, ed. cit. Tom. I, p. 606.

[2] For an account of the work in the cathedral school at Chartres, perhaps the greatest centre for the study of grammar in its day, see Poole, Ill. of Hist. of Med. Th., 119-124.

ponere); its end is to please through skill in polished and faultless speech and writing." (De Gram. I.)

Method. The texts were written in the strange and difficult tongue which it was the object of the study to master. Hence the teachers were under the necessity at first of interpreting them word for word. All books were manuscript and hence rare and expensive. Often only the teacher had one from which he dictated the lesson to be learned. The pupils repeated it until it was fixed in their minds and wrote it out on their wax tablets. The lessons were repeated aloud. In the life of St. Maglorius the boys ask permission to go down to the seashore so that they may not disturb the sleep of the monks by their loud repetitions of their lessons. The rules were illustrated by passages from the poets, especially Virgil.

The book in almost universal use for beginners was the Ars Minor of Donatus, a text admirably fitted for this purpose both by its clearness and conciseness and its catechetical form. Cassiodorus (De Gram. I), after mentioning some of the other grammarians whose writings were known in the middle ages, such as Palaemon, Phocas, Probus, and Cesorinus, states, "Nevertheless we give Donatus the chief place (Nobis tamen placet in medium Donatum deducere); since he is shown to be especially suitable for boys and beginners." Perhaps no text-book has ever had so wide a vogue through so long a period. The word 'Donat' or 'Donet' came to mean a primer or text, not only in grammar, but in other subjects as well. The fact that it was in the form of questions and answers, usually brief and simple no doubt made it more easily understood. It discusses merely the eight parts of speech and begins as follows:

"How many parts of speech are there? Eight. What are they? Noun, pronoun, verb, adverb, participle, conjunction, preposition, interjection. What is a noun? A part of speech with case signifying a body or thing particularly or commonly. How many attributes have nouns? Six. What are they? Quality, comparison, gender, number, figure, case. In what does the quality of nouns consist? It is two-fold, for a noun is said either of one and is proper or it is said of many and is common. What are the degrees of comparison? Three. What are they? Positive as doctus, comparative as doctior, superlative as doctissimus. What nouns are compared? Common nouns signifying quality or quantity. The comparative degree serves what case? The ablative without a preposition, for we say "doctior illo." (Donatus, Ars Minor in Keil. Grammatici Latini IV, p. 355.)

At a time when all books were written it was much easier than it is now for a teacher to change a text-book to suit himself, and indeed Donatus underwent excisions, interpolations

and additions of all sorts at the hands of various teachers. It became almost a matter of professional pride for every teacher to make his own Donatus. A passage (Ex codice Leidensi 122) printed in Keil (V, p. 325) complains of this;—"Donatus's book of the arts has been so vitiated and corrupted by many, since any one either adds to it at will (pro libitu suo) what he has seen in other authors or inserts declensions and conjugations and other things of this sort so that it can scarcely be found uncorrupted and entire, as he published it, except in the ancient codices."

The larger treatise by Donatus is still much more concise than most of the other grammatical treatises in use in the middle ages. It is divided into three books. In the first he discusses sound, letters, syllables, feet, tones and pointing, *i. e.*, interpunction, the old method of punctuation. In the second he treats of parts of speech, the noun, pronoun, verb, adverb, participle, conjunction, preposition, interjection. The third book contains chapters on barbarisms, solecisms and other errors of speech, also on the metaplasm and the figures of speech. Compared with these the treatise most frequently used in advanced courses, namely that of Priscian, is monumental in size, consisting as it does of 18 books (not, of course, volumes). The author seems to have aimed at the comprehensiveness of the Greek grammarians. The work opens with the definition and classification or sounds into, articulate, inarticulate, literate and illiterate following this the whole of the first book occupying some 38 quarto pages in Keil is taken up with the discussion of the letters one by one, their sounds, the changes they undergo, their combinations, etc.

Priscian's "Partitiones Duodecim Versuum Aeneidos Principalium" must have been a relatively interesting and instructive book to mediæval students. It is a thorough grammatical analysis of 12 verses consisting of the first from each book of the Eneid and is in the question and answer form. The following are specimen extracts. "Scan the verse. Arma vi rumque ca no Tro iae qui primus ab oris. How many caesuras has it? Two. What are they? Semi-quinary and semi-septenary. How many parts of speech has this verse? Nine. How many nouns? Six, arma, virum, Troiae qui, primus, oris. What part of speech is arma? Noun. What kind? Appellative. What species? Common. Of what gender? Neuter. Why? Since all nouns which end in the plural number in a, are neuter. Of what figure is it? Simple. Form a compound from it. Armiger, armipotens, semermis, inermis, inermus. What is its case in this place? Accusative. How do you know? From the structive, that is, from the arrangement and connection of what follows. For 'cano' governs the

accusative; therefore if ever you come across such an arrangement, in place of the neuter place a masculine or feminine the accusatives of which are not like the nominatives and the case will be manifest to you as in this verse he says 'cano *virumque*.' Keil. Gram. Lat. III, 461-462.

The texts of Donatus and Priscian were by far the most popular in the early middle ages. Even in the 13th century it was said,

> "Die besten die wir an grammatica han,
> das was Donatus und Priscian."

(Thomasius v. Zirclaria, Der Welsche Gast. v. 8937. Specht, 88.) It was in this century that the popularity of these texts began to be overshadowed by that of the versified grammar of Alexander de Villa Dei, the Doctrinale.

Among the other grammarians whose works complete or fragmentary have been preserved are Charisius, Diomedes (both probably of the 4th century). Probus, Servius, Cledonius, Pompeius, Julianus, Consentius, Phocas, Eutyches, Augustine, Palaemon (?), Asper, Macrobius, Victorinus, Caesius, Bassus, Fortunatianus, Terentianus (who wrote in verse), Rufinus, Dositheus. Of the writers later than Donatus the greater number either accept him as their chief authority or merely comment on his works.

In the 13th century, as already noted, a new grammar in verse, the Doctrinale by Alexander de Villa Dei, came into vogue. The serious use of such a work as a school text it is difficult for one in our time to understand. The work seems to have been the result of an extension of the practice of versifying certain passages in grammar to the whole work. (Das Doctrinale des Alexander de Villa—Dei. Mon. Germ. Pad., Vol. 12, pp. XXII, etc.) The formation of the genitive of nouns in the third declension is discussed as follows:

> "Format nomen in a genetivum tis sibi juncta.
> is facies ex e, veluti mare sive sedile.
> onis habes ex o: sed inis do perficit et go
> femineo genere, nemo sociatur homoque.
> ordo vel margo, cardo, cum turbine virgo.
> sic et Apollo facit; Britonisque Brito, caro carnis.
> lac lactis ponit, allec allecis habebit.
> is post l pone; sed lis mel felque dedere."
> (Doctrinale, V. 99-106.)

When sufficient knowledge of Latin had been acquired, exercises in reading were taken up, the aim now being to train not merely to enunciate clearly as in the elementary course, but to get the meaning of the passage. The reading selections

seem to the students of to-day strangely familiar, for many of them known as the fables of Esop are still widely used in modern readers. These fables were probably first translated into Latin by Phaedrus in the first century. They were thrown into a variety of forms in prose and verse during the succeeding centuries by imitators of Phaedrus as well as by imitators of these imitators. Indeed so diligently were they re-written that the original Phaedrus sank into oblivion. (Hervieux, Les Fabulistes Latin, Vol. I, p. 34.) One of the most widely read of these emulators of Phaedrus was Avianus, the date of whose writings is placed anywhere from the 2nd to the 6th century, A. D. The following from the version of Walter the Englishman in the 12th century (Hervieux, Les. Fab. Lat. I, p. 452) will serve to illustrate one of the forms in which these familiar fables appeared in the mediæval readers.

De Vulpe et Corvo.

Vulpe gerente famem Corvum gerit arbor; et escam
Ore gerens Corvus, Vulpe loquente, silet;
Corve decore decens, cygnum candore peræquas;
Si cantu placeas, plus ave quaque places.
Credit avis, pictæque placent præludia linguæ;
Dum canit, ut placeat, caseus ore cadit.
Hoc fruitur Vulpes; insurgunt tædia Corvo,
Asperat in medio damna dolore pudor,
Fellitum patitur risum, quem mellit inanis
Gloria; vera parit tædia falsus honor.
(Hervieux, Les. Fab. Lat. II, p. 391.)

The majority of the fables most familiar to the children and adults of to-day, and still common in our readers such as The Wolf and the Lamb; The Fox and the Grapes; The Greedy Dog and the Piece of Meat, are to be found in these reading texts of the mediæval schools.

Some of these versions of the fables, notable those of Odo of Sherrington, manifest a strong moralizing tendency. This tendency, no doubt, accounts for the extensive use of a collection of maxims known as the Disticha de Moribus Catonis (Pez. Thesaurus Anecdotorum, III, 2, 487, Specht, p. 93).

The book contains 56 brief proverbs (sententiæ) most of them consisting of two words each. No doubt the brevity of these, as well as their moral content, recommended their use as primary reading exercises. They remind one irresistibly of modern copy-book headlines. The first six are I. Itaque Deo supplica, II. Parentes ama, III. Cognatos cole, IV. Magistrum metue, V. Datum serva, VI. Foro pare, *i. e.* (accommodate yourself to present circumstances). Following the sententiae

are the 145 distichs divided into four books. The following will serve as specimens:

Lib. II. Distich IV. "Do not get enraged and quarrel over some doubtful matter: wrath impedes the mind, so that we cannot discern the truth."

Lib. IV. Distich XIX. "Learn something; for when fortune suddenly flees art remains and never fails the life of man."

Among the most interesting of the reading-texts used in the schools of the earlier middle ages was the Eclogue ascribed to Theodulus (Osternacher, Theoduli Ecloga, p. 10) and written probably in the ninth century. (Osternacher, p. 12.) The poem, which is allegorical in character, has the didactic purpose of demonstrating the superiority of Christian dogma to pagan superstition. (Osternacher, *op. cit.*, p. 7.) A flute-playing shepherd, Pseustis (Falsehood) challenges a shepherdess Alithia (Truth) whose playing of the cithara had charmed both the neighboring stream and her flock into silence and immobility, to a contest. Fronesis, another shepherdess, is chosen as judge. In alternate quatrains of Leonine verse Pseustis, the champion of paganism, and Alithia, who represents Christianity, sing the great events and the great heroes associated with their respective beliefs. The contest opens as follows with the pagan account of the creation:

PSEUSTIS.

"Saturn, the first, comes from the shores of Crete
Disposing his glorious offspring (aurea-sæcula) through all the earth:
No progenitor had he, nor was any one older.
As sire he rejoiced in a noble progeny of deities."

Alithia responds with the Christian account.

The first man was a dweller in verdant paradise
Until, his wife persuading him, he drained the viperous venom
By this mixing the draught of death for all;
The descendants still suffer for the crime which their parents committed.

(Ecloga, vv).

Pseustis's account of the peopling of the earth after the deluge by Deucalion is matched by Alithia's account of the life of Noah; similarly the story of the uprising of the giants against the gods is paired with that of the building of the tower of Babel; to Cadmus, the inventor of the literary arts of Greece, is opposed Moses who mediated to the Jews the learning of the Egyptians, and so on.

The poem, it will be seen, was admirably adapted for correlation with the great central subject of theology. Its wide-

spread use as a reading-text in the schools is evidenced not only directly in records that have been preserved (Breslauer Urkundenbuch, ed. Korn, Breslau, 1870, p. 35; Rashdall, *op. cit.*, II, 602), but by the great number of manuscript as well as printed copies of various editions which still exist. (Osternacher, Ecloga Theoduli, Chap. 3, p. 23, also pp. 13-29.)

The form of the poem can best be shown by an example.[1]

ALITHIA.

Samson exuviis indutus membra leonis
Sternit mille viros, devastat vulpibus agros
Urbis claustra tulit, nervorum vincula rupit;
Fraude sua tandem praecidit Dalila crinem. (vv. 177-180.)

Dr. Paul Abelson in an interesting account of the mediæval teaching of reading (The Seven Liberal Arts, pp. 13-20) mentions Othlo's Liber Proverborum, Arnulf's Deliciae Cleri, Egbert's Fecundia Ratis, the Proverbia Wiponis and the Proverbia Heinrici as mediæval reading texts.

These books were not only translated carefully word for word but numerous passages were learned by heart. Of the classical poets, Virgil was the most widely read, probably not because of his excellence as a poet but because most of the examples in Donatus and Priscian were derived from him. But great freedom of choice was exercised. The taste of the teacher and the character of the books at hand usually determined the selection. Where the ascetic tendency was strong the reading was largely confined to the Christian poets especially Juvencus, Sedulius and Prudentius, the "disertissumus atque christianissmus poeta." At the cathedral school at Speier under Bishop Balderich (970-986), besides Virgil; Horace, Persius, Juvenal, Statius, Terence, Lucan, Martianus Capella and Boethius were read (Waltheri Spirens, Vita S. Christoph. *lib.* I de studio V, 92-106. Specht, 100). The list made out in 1280 by Hugo of Trimberg, schoolmaster in Bamberg, includes in addition to the above Ovid, and the Christian poets. The modern principle of apperception was frequently observed in

[1]There seems to be much difference of opinion as to the proper scansion of mediæval Leonine verse. Besides the regular hexametric scansion Dr. Theodate L. Smith suggests the following in which the natural accent is preserved.

Sāmsōn | ēxŭvĭ | īs || in | dūtūs | mēmbră lē | ōnīs.

If in the modern fashion we accent the rhyming syllables and neglect classical traditions we get such a jingle as the following.

Sāmsōn | ēxŭvĭ | īs || ĭndŭtŭs | mēmbră | lēōnīs.

that the study of an author was often prefaced by an account of his life. This was called the "accessus ad poetas." Collections of such brief introductions are preserved in two MSS. from the 12th century (Cod. lat. Mon. nr. 19,474 et 19,475, Specht, 103). Much labor was apparently devoted to the task of expounding the authors read. The commentaries of Servius were used in the study of Virgil.

An extract or two from the comments of Servius on the first two or three words of the Eneid, "Arma virumque" will show how exhaustively this work was carried out.

"Arma virumque, etc. Many discuss variously why Virgil should begin with "Arma."—We understand 'arma' to signify 'war' and it is the trope Metonymy. For he places 'arma,' which we use in war, for war. So the toga which we use in times of peace is used for peace: as in Cicero. "They exchange their arms for the toga," that is, war for peace. It is a familiar figure that we should reply not in the same order in which we have proposed. For first he speaks of the wanderings of Eneas: afterwards of war. We use this figure also in prose. Thus in Cicero's oration against Verres. Some think here we have the figure of hyperbaton (transposition of words) as if the sense were thus: "Arma virumque cano, genus unde Latinum Albanique patres atque altae moenia Romae;" then you go back to the words "Trojae qui primus ab oris, etc. Others think the word 'arma' properly used in this place; first, because they were victorious; secondly, because they were divine; thirdly, because he always subjoins man to arms; and it is a professive poetic beginning," etc. (P. Virgilii Maronis Opera cum integris Notis Servii, etc. Amsterdam, 1680, Tom. II, Pt. I, p. 5.)

The commentaries of mediæval origin, very many of which have come down to us, contain flagrant errors. In one 'provincia' is said to be an adverb meaning 'swiftly.' 'Circenses' is derived from 'circum enses' "because on one side ran the river, on the other they set up swords, and between the two was the race-course." (Comparetti, Virgil in the Middle Ages, pp. 127-130.)

But, as already stated, the main object was not an adequate appreciation of the content of a literary masterpiece, but the development of skill and readiness in expressing one's self in Latin. Hence the emphasis was laid upon extensive reading and the diligent memorizing of entire poems. Ability to express one's self readily in Latin was considered the sign of a good grammatical education. (Specht, p. 103.)

Rhetoric. It is scarcely to be expected that an art designed to train for public life should flourish in the schools of the

mediæval clergy, a class whose religious instincts and beliefs led them to retire from the world. The subject was studied in mediæval schools along with the others of the traditional Roman course in the seven liberal arts, but the relative fewness of the texts and commentaries on it that have come down to us are an indication of the indifference with which it was regarded. "All that remained of classical rhetoric, properly speaking, was the configuration, the terminology, certain definitions, and especially that part relating to tropes and figures which had already in ancient times formed the connecting link between rhetoric and grammar, the former thereby becoming as it were a sort of appendix of the latter." (Comparetti, Virgil in the Middle Ages, pp. 131-132.) In the few schools where special attention was given to rhetoric, Cicero's treatises Ad Herennium and De Inventione were studied (Specht, 116-117). Elsewhere briefer works based upon these were used, such as the passages treating of the subject in the cyclopædias of Martianus Capella, Cassiodorus, Isidore and others.

The position of the clergy as the distinctively literate class in mediæval society imposed upon them the task of not only carrying on much of the important correspondence of their time, but also that of drawing up wills, deeds and other legal documents.

The Carolingian laws prescribe that the clergy must have the ability to write "Letters and documents" (Quae a presbyteris discenda sint c. 15 Mon. Germ. Leges, Sect. II, Capit. Reg. Franc, I, 235, Specht, p. 118). "Every man of importance," writes Wattenbach (Schriftwesen in Mittelalter, p. 266, Specht, 118), "had to have a cleric about him to look after his correspondence." The educational need thus created was met through a modification of the exercises in prose and metrical composition, the dictamen poeticum and the dictamen prosaicum. The latter, the dictamen prosaicum, became a subject of great importance and came to consist chiefly in training in the art of writing letters and legal documents. The study of the latter led to the study of law, which later developed into an independent department of study in the mediæval universities. (Rashdall, Universities of Europe in the Middle Ages, Vol. I, pp. 110-111.)

Law. The study not only of canon but of civil law seems always to have been an important part of the early mediæval curriculum. Alcuin mentions it as part of the course of study at York. Aldhelm, in his account of his studies at Canterbury, speaks of "becoming acquainted with all the secrets of Roman Jurisprudence" (Drane, Christian Schools and Scholars, p. 68). Boniface writes of the difficulty of "investigating thoroughly

the prescriptions of the Roman laws." (Bonifati epist. 3: Jaffé. Bibl. R. S. III, 32: Specht, p. 121.) Hartmann v. Aue even speaks of it as if it were the chief subject of the course in the 12th and 13th centuries.

> "In seinem elften Jahr
> In Wahrheit sag ich, war
> Kein besserer Grammaticus,
> Als hier das kind Gregorius . . .
> Von legibus las er nachher
> Es ward das kluge Kind gar sehr
> In dieser Kunst nach kurzer Frist
> Ein tüchtiger Legist." (Gregorius vv. 1009+).

The large part played by churchmen in the statecraft of the mediæval period explains the time and effort devoted to this subject. Though apparently treated in some schools as a separate subject it was interpolated, as we have seen, among the subjects of the trivium.

The somewhat meagre curriculum of Abbot John of Gorze (see p. 18) includes the study of the "worldly laws" as well as of the decrees of the church council.

The methods employed in teaching letter-writing and conveyancing resemble those of our best modern schools. The letters of eminent persons and documents of all sorts were collected as models; hence the mediæval Letter-writers and Formulæ Books. But, as too frequently happens, one result of this school activity was to make the art stiff and formal. Textbooks on the art which begin to appear in the eleventh century expatiate upon each of the five divisions of a letter; 1, the salutatio or greeting; 2, the captatio benevolentiæ or the way to make a good impression, in regard to the matter in hand, upon the person addressed; 3, narratio, the able statement of the subject of the letter; 4, petitio, the proper method of making a request or a demand; 5, conclusio, the fitting conclusion. Great demands were made upon the imagination in affording the students practice in this art. All sorts of conceivable cases, including even negotiations between kings and the issuing of imperial manifests were invented as the basis for these exercises.

"In one part of this city" (sc. of rhetoric), says a mediæval writer describing the rhetorical work of the schools, "princes of the church compose decrees, in another kings and judges issue edicts. Here the decrees of synods are promulgated, there the laws of the forum are treated. In this city Tully teaches wayfarers the art of ornate speech." (Honor. Augus-

tod. de animæ exilio c. 3, ap. Pez. II, 1, 229, note in Specht, p. 117.)

It was these practical exercises in letter-writing and conveyancing that constituted the course called rhetoric in most of the mediæval schools. (Specht, 117-120.)

Dialectic. In close connection with rhetoric was taken up the remaining subject of the trivium, that of *dialectic.* While on the one hand it was free from any taint of paganism, on the other it was better calculated than either grammar or rhetoric to appeal to those intellectual interests which found in the religious conditions of the middle ages a not uncongenial environment. (Rashdall, Univ. of Europe, I, 36.) When in the 12th and 13th centuries theology came to be treated not as mere dogma but as a rational science, dialectic, outstripping even grammar, rose to the first place among the seven liberal arts. The science was highly recommended by Rabanus Maurus in the ninth century as a means of detecting falsities in the arguments of heretics. (de cleric. instit. III, 20. Specht, p. 123.)

In Fitzstephen's description of the work of the London schools of his day, in the preface to his life of Becket we see the strong influence exerted by dialectic upon the spirit of the schoolwork of the 12th century. "Upon the Holidays assemblies flock together about the Church, where the Master hath his abode. There the Schollers dispute; some use demonstrations, others topicall and probable arguments; Some practice Enthimems, others are better at perfect Syllogismes; Some for a shew dispute, and for exercising themselves, and strive like adversaries; Others for truth, which is the grace of perfection. The dissembling Sophisters turne Verbalists and are magnified when they overflow in speech; some also are entrapt with deceitful arguments. Sometime certaine Oratours with Rhetoricall Orations, speake handsomly to persuade, being carefull to observe the precepts of Art, who omit no matter contingent. The Boyes of diverse Schooles wrangle together in versifying, and canvase the principles of Grammar, as the rules of the Preterperfect and Future Tenses. Some after an old custome of prating, use Rimes and Epigrams; these can freely grip their fellowes, suppressing their names with a festinine and railing liberty, these cast out most abusive jests, and with Socraticall witnesses either they give a touch at the vices of Superiours, or fall upon them with a Satyricall biternesse. The hearers prepare for laughter, and make themselves merry in the meane time." (quoted in De Montmorency, State Intervention in English Education, pp. 43-44.)

As texts the mediæval students possessed Latin translations

by Boethius of Aristotle's Categoriæ and De Interpretatione, also Boethius's commentaries on Aristotle, De Syllogismis Categoricis, De Syllogismis Hypothecis, De Differentiis Topicis and De Divisionibus, as well as his translation of Porphyry's Isagoge or Introduction to Aristotle. In addition to this dialectic was treated in the cyclopædias already mentioned of Martianus Capella, Cassiodorus and Isidore. Richer describes the course given by Gerbert in the cathedral school at Rheims, near the close of the 10th century, as follows: "First he explained the Isagoge, that is Porphyry's introduction to the categories of Aristotle according to the translations of . . . Victorinus and . . . Boethius. Then he explained Aristotle's book of the Categories or Predicates, and in suitable fashion made his pupils acquainted with the difficulties of the book. . . . De Interpretatione. Then he presented the Topics, that is the doctrines of the source of proof, which Tully had translated from Greek into Latin and which . . . . (Boethius) had explained in a commentary in six books. With the same industry he read and explained the four books of the topical differences, the two books of the categorical and the three books of the hypothetical conclusions, the book of definitions and the book of divisions." (Histor. III, 46, 47, Pertz. Mon. Germ. SS. III, 617. Specht, 124-125.)

On the authors mentioned commentaries were written. Brief compends were made for school use. The study was enlivened by the fact that the principles of reasoning and of argumentation learned were applied in practical exercises in disputation as in the instances cited by Fitzstephen. (See p. 245.) Theological questions were the standard subjects of disputation. In fact dialectic grew into primacy among the seven arts as an auxiliary in the development of the great central subject of theology. The Scriptures formerly studied with the aid of grammar and the church fathers were now studied more and more from the standpoint of logic. As will be noted elsewhere it was in connection with the development of the two allied sciences of theology and dialectic that the teachers and students in attendance at the church schools of Paris increased in numbers and gradually organized themselves into a university.

The Quadrivium. Although the trivium together with the elementary course afforded a sufficient foundation for the work in theology, nevertheless those who desired a complete course of instruction took up in detail the study of the subjects of the Quadrivium; arithmetic, geometry, music and astronomy. (Specht, 127.) Some smattering of these subjects was afforded even in schools that did not give a regular advanced course. In the

greater centres of mediæval learning, such as St. Gall, Reichenau, Rheims, systematic and extended courses in these subjects were given. The work was considered of great difficulty and suitable only for those who were especially talented. Gerbert gave instruction in mathematics to those only who possessed the requisite capacity. (Richer, Histor. III, 49, Pertz. Mon. Germ., SS. III. 617. Specht, 127.) The other students were required, however, to gain at least some knowledge of the four sciences. Knowledge of the essentials of at least three of them, music, arithmetic and astronomy was, as we have seen, indispensable in the training of the clergy. (See p. 232.)

Arithmetic. The elementary course already described (see p. 232) seems to have comprehended about all of the subject that was of practical value. In the treatises used in the advanced course in the early middle ages much space was devoted to Pythagorean cogitations upon the mystical attributes of numbers. (Whewell, Hist. of the Inductive Sciences, Vol. I, pp. 305-309.) Martianus Capella's chapter on the number 4, for instance, runs as follows: "What shall I call four? in which is a certain perfection of solidity; for it is composed of length and depth, and a full decade is made up from these four numbers added together in order, that is from one, two, three, four. Similarly a hundred is made up of the four decades, that is, ten, twenty, thirty, forty, which are a hundred; and again four numbers from a hundred on amount to a thousand, that is, 100, 200, 300, 400. So ten thousand is made up of another series. What is to be said of the fact that there are four seasons of the year (quid quod quatuor anni tempora), four quarters of the heavens and four principles of the elements? There are also four ages of man, four vices and four virtues." (Lib. VII, 8,734.) This sort of thing seems to have been quite in harmony with the spirit of early mediæval learning and it is interesting to note Rabanus Maurus's application of it in scriptural exegesis. "A real thinker," he says (De cleric, Instit. III, 22), "will not pass on indifferently when he reads that Moses, Elijah and our Lord fasted forty days. Without strict observation and investigation the matter cannot be explained. The number 40 contains the number 10 four times by which all is signified which concerns the temporal. For according to the number 4 the days and the seasons run their course. The day consists of morning, midday, evening and night, the year of spring, summer, autumn, winter. Further, we have the number 10 to recognize God and the creature. The three (trinity) indicates the Creator; the seven, the creature which consists of body and spirit. In the latter is the three: for we must love God with our whole heart and soul

and mind. In the body on the other hand, the four elements of which it consists reveal themselves clearly. So if we are moved through that which is signified by the number 10 to live in time—for 10 is taken four times—chaste, withholding ourselves from all wordly lusts, that means to fast 40 days. So the Holy Scriptures contain suggestively in the many different numbers all sorts of secrets which must remain hidden to those who do not understand the meaning of numbers." (Specht, 134-135.) About one-third of Martianus Capella's treatise is given up to the discussion, similar to that quoted above, of the attributes of the first ten numbers the rest treats of the nature of number and of the different classes of numbers (odd, even, composite, perfect, imperfect, pluperfect, plane, solid, also of ratio, multiples).

Notwithstanding the exhortation of Rabanus Maurus, the science of arithmetic, aside, of course, from its practical applications in the computus and ordinary calculation, fell more and more into neglect until it was revived through the genius of Gerbert, afterwards Pope Sylvester II, in the 10th century. His mathematical knowledge, though to a modern it seems very modest, sufficed to achieve for him the reputation of a wizard. Aided by the study of some long neglected mathematical treatises by Boethius he constructed an abacus or reckoning table which facilitated the process of multiplying and dividing with the clumsy Roman notation. The table contained 27 vertical columns. The value of a number depended upon the column in which it was placed. IV in the column to the right would signify 4 units, in the next to the left 4 tens, in the next 4 hundreds, and so on. On this plan 57042 would be expressed as follows:

XD	M	C	X	I
V	VII		IV	II

The methods of multiplying and dividing, though no doubt a great advance on older methods, seem to us tedious and complex. Division with any but the smallest numbers had been up to that time an extremely difficult operation. Gerbert's method may be called that of Division with Decadic Difference (Nagl, Gerbert und die Rechenkunst des 10 Jahrhunderts, pp. 32). The divisor was increased by the smallest number that would make it a multiple of ten. For instance, to take a very brief example, 97 is to be divided by 16. Using the Arabic notation for the sake of clearness the operation would be performed about as follows:

	97	÷	16	
(a)		÷	20 = 4	
	80			
(b)	17			
(c)	16			
(d)	33	÷	20 = 1	
	20			
	13			
	4			
(e)	17	÷	16 = 1	
	16			
Remainder	1		6	Quotient

(a) 16 is increased by 4, the least number which added to it will make it a multiple of 10. (*i. e.* 20.) 20 is contained in 97, 4 times, leaving a remainder (b) of 17. But each 20 taken was too great by 4, hence with the 4 twenties, an excess of 4 fours or 16 was taken away. The 16 (c) is added, therefore, to the remainder making 33. This is again divided by 20, giving a quotient of 1 (d) and leaving a remainder of 13. In taking away 20, we took 4 too much. This is restored by adding it to the remainder 13, making a total of 17 (e). This is divided by 16, leaving a quotient of 1 and a remainder of 1. The quotients 4, 1 and 1 are now added making 6. Hence $97 \div 16 = 6\ 1/16$.

With larger numbers and with the addition of fractions to the divisor the above operation became enormously complicated and it is no wonder that Wm. of Malmesbury, speaking of Gerbert's rules of computation states that they "are scarcely understood by the sweating abacists" (Gesta reg. Angl. in Migne, Patrol. Lat. vol. 179 page 1137 s.; Nagl, Gerbert, p. 8, note).

The Arabic notation which is not only, like Gerbert's reckoning table, based on the decimal system but which has also a symbol for zero came into use in Europe in the thirteenth century and replaced the older method only in the three or four following centuries, so conservative are men in matters of this sort. (Cajori, History of Mathematics, pp. 129.)

Geometry. As among the Romans the term geometry was understood more in its literal sense than it is now. Cassiodorus discusses its definition as follows, "Geometry means in Latin the measurement of the earth; since through the various forms of this discipline Egyptian lands are said to have been partitioned among the proper owners. The teachers of this discipline were formerly called mensores." (De Geometria.)

Among the Romans the term had come to signify largely what we mean by geography. Martianus Capella, whose chapter on geometry was the most widely used text on the

subject up to the 11th or 12th century, discusses it under such heads as the following:—Position of the earth. The Five Zones of the earth. Circuit of the earth. Longitude of the earth. . . Spain. The Pyrenees Mountains and the Province of Narbonne. Italy. Founders of cities. Sicily. Similarly he devotes chapters to other important regions of Europe and of Asia and Africa. The whole concludes with three chapters of a more mathematical character in which the properties of plane and of solid figures are discussed. It will be noted that the course as mapped out in Martianus Capella involves practically nothing of what we call geometry. Occasional passages are interesting because of the light they throw on the geographical knowledge of the time. Capella, for instance, adopts the theory of the sphericity of the earth. "The form of the whole earth is not plane as those estimate who liken it to the shape (position) of an extended disk, nor concave as others believe who say that rain descends into the bosom of the earth, but round and spherical (globosam) as the second Dicaearchus asserts." (Lib. VI, 590.)

In treating of little known regions Capella's descriptions, like those of Strabo and earlier writers, are likely to become fabulous. But unlike Strabo (see Strabo, B. XVII, c. III, § 3), he makes no apology for his presentation of a mixture of the true and the mythical. For instance, of central Africa he says, "Amidst these solitudes live the Atlantes, who have no names among themselves and worship the sun which scorches them with their crops. They are never seen to sleep. The Troglodytes remain in their caves and feed on serpents, and they make a grating noise (stridunt) rather than speak. The Blemmyae are without head and they have the mouth and eyes in the breast. The satyrs have nothing human except the face (hominum nihil habent nisi faciem). (Lib. VI, 673-674.)

The study of topography seems to have been facilitated by the use of maps and other illustrative material. In the 11th century in speaking of geometry the statement is made that "Aratus spreads out the map of the world on which he shows Asia, Africa, and Europe and enumerates the mountains, cities and rivers. (Honorius Augustod. de animae exilio c. 7; Specht, 146.) Theodulf, of Orleans, describes a map which had been drawn up with unusual skill. (Carm. 47, Mon. Ger. Poet. lat. med. aev. I, 547; Specht, 146.) The terrestrial globes constructed by Gerbert as aids in the study of geography aroused general admiration (Ball, Short Hist. Math., pp. 127).

In connection with this subject some attention was paid to the study of natural history. Alcuin's list of the subjects studied in the Cathedral School at York includes "The five zones, the currents of the air, the movement of land and sea,

and the nature of men and of wild animals." (de sanct. Euboric. eccl. 1441-1444.) Material for this study was derived largely from the Libri Originum seu Etymologiarum of Isidore of Seville. Rabanus's rather meagre copy entitled De Universo was still more widely known.

The general interest in the varieties of animal life is indicated by the popularity of 'Physiologus,' a book originating in Christian Antiquity and re-edited and enriched up to the 13th century. The book gave accounts true and fictitious of the characteristics of real and of fabulous animals, also of strange stones and trees. Its religious and mystic character suited the taste of the time. The qualities of the animal were connected with the doctrines of Christianity and suggested moral reflections and symbolism. (Specht, 148-149.)

The study of geometry in the purely mathematical acceptation of the term seems to date from the discovery by Gerbert of the geometry of Boethius, which contains an extract from Euclid. Gerbert seems to have given practical instruction in land surveying based upon a study of some fragments of Roman treatises on that art found by him in his monastery of Bobbio. (Günther, Gesch. d. math. Unter., pp. 114-115. Ball, Short Hist. of Math., p. 128.)

Astronomy. Not only was astronomy a part of the traditional Roman course in the seven arts, but it was a science of which practical use was made in the arrangement of the calendar. Rabanus Maurus considered it the duty of the clergy to study diligently that part of astronomy which "includes the investigation of the course of the sun, of the moon and the stars and the change of the seasons (De Cleric. instit. III, 25) in order that they might be able to reckon the beginning of the Easter festival and the date of every holy day and correctly inform their parishioners of these." (Specht, pp. 136.)

The subject generally involved the study of the division and measure of time, the difference between time reckoning according to the sun and according to the moon, the calendars of the Hebrews, Greeks and Romans, the characteristics of the stars, the course of the seven planets, the meaning of the 12 signs of the zodiac. (Rabanus, Liber. de computo c. 9-36, 37-52. Specht., 137.) Among the texts most frequently used were the encyclopædia of Martianus Capella, Julius Hyginus 'poetica astronomica,' and Aratus didactic poem, 'Phaenomena.' The first of these contains a chapter entitled "That the Earth may not be the Centre for all the Planets," an instance of a suggestion of the solocentric theory 1000 years before Copernicus. "Although Venus and Mercury," writes Capella, "rise and set daily, nevertheless *their orbits do not go round the earth at all, but they circulate in a somewhat* wider course about the sun."

(Lib. VIII, 856.) Delambre as quoted by Mullinger (Hist. of Univ. of Camb., Vol. I, pp. 27) states "It is said that it was these few lines which Copernicus took as the subject of his meditations and which led him to his system of the world."

The methods employed were often quite objective in character. Richer, the pupil of Gerbert, writes that "at night time when the stars shone in the heavens the teacher and his scholars observed the oblique course of the stars in the different regions of the sky." (Histor. III, 50; Specht, 138.) The students were shown how, by the position of the stars, they could determine the hour of the night, a matter of practical importance before clocks were invented, especially to monks who had in turn to hold watch and give the signal for the night service. Gerbert illustrated his lectures on astronomy with ingeniously constructed models (Gerberti epist. Migne, Vol. 139, pp. 155. Specht, 139 Ball, Short Hist. of Math., pp. 127). Notker Labeo gives a description of a celestial globe in the monastery at St. Gall. A manuscript from the same monastery contains a picture of a monk gazing at the stars through a telescope.

Music. Music, the remaining subject of the quadrivium, was a subject of even greater practical importance in the professional training of the clergy than arithmetic or astronomy. "Whoever," says Rabanus (De cleric. instit. III, 24, Specht, 140), "is not skilled in music is not in a position to perform the duties of an office in the church in a proper manner." The technique of music was acquired in the elementary course and in the regular participation in the church services. The study of music as part of the quadrivium was almost purely theoretical. Mere skill in singing or in performance upon a musical instrument did not entitle one to be called a musician. (Gerbert De Musica sacra, I, 87, 88, Specht, 143.) Only the most capable students pursued the subject, to which arithmetic was considered a necessary propædeutic. Gerbert, the great scholar and teacher of the 10th century, upon the completion of his course in arithmetic took up the work in music. He demonstrated the different tones on the monochord, showed their consonance or harmony in tones, semitones, double and quarter tones, combined the tones into chords according to the rules of the art, and in this manner disseminated a thorough knowledge of music." (Richer, Histor. III, 49. Pertz. M. G. SS. III, 617; Specht, pp. 142.)

Boethius's treatise in five books was the standard text on this subject throughout the middle ages. In the first book a general discussion of the nature and the history of music and its three-fold classification leads to a definition of consonance as "the constancy of dissimilar sounds reduced to unity among

themselves." He then notes that consonance corresponds to the number relations of 2:1, 3:1, 4:1, 3:2, 4:3. A special name is given to each of these relations. A discussion of the intervals and their division into tones and semitones follows. To each string tuned in accordance with this system of intervals a special name is given. The different scales and their characteristics are then noted: the diatonic, chromatic and enharmonic. In Pythagorean fashion analogies between the planets and the tones of the scale are pointed out. The second book contains some purely arithmetical investigations of square numbers, and upon these are based speculations as to arithmetic, geometric and specifically geometric, that is, harmonic proportion. The third book opens with a criticism of the musical theory of Aristoxenus, proceeds to a discussion of Philolaus's classification, and of musical notation, and closes with a description of the monochord. The fourth book consists chiefly of criticism of the views of the ancient writers on music. (Günther, Geschichte d. Math. Unt., pp. 112-113.) The dryness of this purely formal treatment of the subject and its exceedingly abstruse character should not lead to the conclusion that a love of the art was altogether wanting. Its importance in the services of the church would contradict this view as would also certain mediæval references to music such as the following from Baeda quoted in Drane. Christ. Schools and Scholars, pp. 80.) "Among all the sciences this one is most commendable, pleasing, mirthful and lovely. It makes a man liberal, cheerful, courteous, amiable. It rouses him to battle, enables him to bear fatigue, comforts him under labor, refreshes the disturbed mind, takes away headaches, and soothes the desponding heart."

The cathedral school at Metz and later the monastic school at St. Gall were famous centres of musical culture. Of the latter it is written in the life of Notker that "Through different hymns, sequences, tropes and litanies, through different songs and melodies as well as through ecclesiastical science the pupils of this monastery made the church of God famous not merely in Alemannia, but everywhere from sea to sea." (Specht, 141.) Of the St. Gall scholars and teachers Notker, Ratpert and Tautilo were famous composers.[1]

[1] Scheffel's Ekkehard, Marty's Wie man vor tausend Jahren lehrte und lernte, in the form of a diary by Wallafrid Strabo, in Jahresbericht, Kloster Einsiedeln, 1856-1857, and Zimmerman's Ratpert are works of fiction which give interesting and life-like descriptions of monastic school work. They seem to be based upon a careful study of historical data.

X. The Mediæval Schools.

(a) THE MONASTIC SCHOOLS.

1. *The Functions of the Monastery in Mediæval Society.* The monasteries occupied in the social life of the early middle ages a place of great importance. They were the inns, the hospitals, the banks of the times. (Cam. Mod. History, II, 468.) In some instances they were great centres of theological, medical and legal learning as well as of liberal culture. They were centres, not only of learning, but of industry and art. (*Ibid.*) Wealthy Benedictine monasteries such as St. Gall, Corvey, Reichenau, were famous for their architects, sculptors, painters, goldsmiths, etc. (Schuster, Geheime Gesellschaften, I, 398 note.)

2. *Extent of educational influence.* In the early middle ages they had not only inner schools for novices, but outer schools for the laity and the secular clergy. A Capitulary issued under Lewis the Pious and his advisers closed the schools in monasteries to all but those taking up the monastic life. (Cæsarii Arelat. episc. regula c. 5. Holsten-Brockie, Codex regul. I, 356. Specht, pp. 33.) How far this order was observed it is difficult to say. That it was not followed everywhere is proven by the subsequent history of the monastery of St. Gall which, like Fulda and Reichenau, seems to have performed the functions of a university. (Koldewey, Braunschweigische Schulordnungen, Mon. Germ. Pad. vol. 8, pp. VIII-XI, & Poole, Ill. of Hist. of Med. Thought, 87.) Leach inclines to the belief that the educational work of the monks in England was closely restricted to those of their own order. He writes (Eng. Schools at the Reformation, pp. 19), "Whether the monks ever even affected to keep a grammar school for any but their own number, among whom outsiders were not admitted, is quite doubtful."

It was in the monasteries that the traditions of learning were best conserved and cherished in the 9th and 10th centuries. (Mullinger, Schools of Charles the Gt. 132.) It was they that supplied upon the continent the need for advanced instruction which found expression in a petition presented by the bishops assembled at Paris in 829 for the establishment of three large public schools open to the monks and the clergy alike. (Mullinger, Schools of Charles the Gt. 136, Specht, pp. 37.) In addition to the schools within the monastery the monks frequently controlled as landlords schools in neighboring towns and villages. (For illustrations see De Montmorency, State Intervention in Ed. pp. 51; Leach, Eng. Sch. at Ref. pp. 19, and York. Sch. I, xxx; Carlisle, Grammar Schools, vol. II,

pp. 513; and Edgar, History of Education in Scotland, pp. 81.)

The boys destined for monastic life, the 'oblati,' were from the first considered as members of the brotherhood. They participated in all religious services and took their turn in the performance of the other duties of the monks. The school, which they entered usually at the age of 7, stood within the enclosure of the monastery.

Wherever as in some of the larger monasteries provision was made for the instruction of boys who were not to become monks, a separate building was provided outside the walls. (Specht, pp. 151. See also plan of St. Gall, Ency. Brit. art. 'Abbey,' vol. I, p. 12.)

3. *Buildings.* The inner school was sometimes located in one of the covered walks of the cloister. (Willis, Monastic Buildings of Canterbury, pp. 44; Rites of Durham, pp. 71. Ency. Brit. art. Cloister.) Where the schools were larger the buildings were often in the form of a quadrangle, a plan still affected in school architecture. In St. Gall the church and the schoolroom formed one side of this, while about the others were ranged the sleeping room, dining room, master's quarters, the sick room, study room and living room. These opened into the court, about which was the usual covered walk, but not into each other.

4. *Maintenance.* Although no fees were charged for tuition (Specht, 155-156), gifts from pupils were accepted. In the case of wealthy students these were sometimes considerable. The widow of Richard, Lord of Molle, for instance, granted to the abbot of Kelso, in 1260, her dowry of certain lands in return for the maintenance and education of her son among the "majoribus et dignioribus scholaribus" of the monastic school. (Cartulary of Kelso, Edgar, Hist. of Scottish Education, pp. 76.)

The parents of Adalbert of Prague gave to his teacher in the cathedral school at Magdeburg, in the 10th century, "Gold and silver and other things valuable in the eyes of men, and paid a high price for the instruction of their beloved son." (Joannis Canaparii Vita S. Adalberti episc. Prag. c. 4, Pertz. Mon. Germ. SS. IV, 583. Specht, pp. 179.)

The poor pupils were in some cases supported by the charity of the monastery or of other patrons; sometimes a pupil was able to work his way through by copying books or performing other services. Some became beggar students, wandering from school to school. (Specht, 157-158.)

5. *Supervision of conduct.* The monastic school was directed by a 'magister principalis.' Great importance was attached to conduct. Numerous assistants were appointed to supervise

the behavior of the pupils. Lupus of Ferrières on sending his nephew and two other boys to the monastic school at Prüm, in the 9th century, wrote to the Abbot that the three boys were not to have more than two custodians. (Servati Lupi epist. 91 opp. ed. Baluzius. Paris, 1664. pp. 137. Specht, 160. See fac simile of drawing from MS. of 13 century, Reicke. Der Lehrer, pp. 16.)

The careful attention to the minutiae of deportment which characterizes the social life of the 13th, 14th and following centuries, and which is evidenced by the numerous books on etiquette dating from that period, marks also the discipline of the monastic schools. The manner of standing, of walking, the position and movements of arm and hands, dress, speech, gestures and even facial expression all were punctiliously regulated. (See p. 271.) (Vita S. Theodorici, C. 8, Pertz. M. G. SS. XII, 41, sq. Specht, 161.)

(6) *Industrial training.* The Benedictine and other rules which prescribed regular manual labor for the monks made many of the monasteries centres of the industrial arts. According to Schuster (Geheime Gesell. Vol. 1, pp. 398), the wealthy Benedictine monasteries at St. Gall, Hirschau, Corvey, Strassburg, Bremen and elsewhere were famous for their skilled architects, sculptors, painters and goldsmiths. Even Chaucer's negligent monk, it will be remembered, "hadde of gold ywrought a curious pin." As demands for the products of skilled workmanship increased the monks were forced to call in laymen to their assistance and according to Schuster, among these workmen are to be traced the origins of the craft guilds. (Schuster, *op. cit.*)

(7). *The Later Monastic Orders.* When in the 13th century the Benedictine order, grown wealthy, relapsed into a condition of indolence and worldly-mindedness typified by the monks of Chaucer's Prologue, monastic schoolwork fell largely into the hands of the younger and more vigorous orders, the Franciscans and the Dominicans (Parmentier, Histoire de l'Ed. en Angleterre, pp. 198), whose influence was felt not only in the lower schools but also in the universities. (Lyte, History of the Univ. of Oxford, pp. 24-31.)

(*b*) Cathedral and Collegiate Church Schools.

(1). *The Collegiate Church.* The changes most affecting the history of non-professional schools took place in the schools attached to the cathedrals and the collegiate churches. A collegiate church differed from a cathedral only in not having a resident bishop. It was a large church supported by endowment. Its functions were administered by a college, that is a collection or company of ecclesiastics consisting of a dean,

canons, deacons, clerks, etc. Later there was a tendency to restrict the term to the clerical corporations of the churches at the university centres. Hence the modern acceptation of the term. But organized bodies of clergy connected with the large churches were originally just as much 'colleges,' that is, corporations as those at the universities. From the first an essential function of these church colleges was the maintenance of a grammar school. (Leach, Eng. Sch. at the Reformation, 11-24.)

Notwithstanding occasional movements to restrict admission to those taking up a clerical career (Specht, pp. 34), the schools of the cathedrals and collegiate churches seem to have exercised a much wider and more direct influence upon the laity than did those of the monasteries. Alcuin's biographer tells us that Albert at the York cathedral school had round him "a flock of scholars from the sons of gentlemen," of whom only "some" were instructed "in the divine writings." Leach goes so far as to say that the cathedral school at York was "no mere choristers' school or ecclesiastical seminary" but that its students were "much the same kind as in the public school to-day." (York. Sch. 1, x.)

The cathedral and college schools are so nearly identical in character that they may be discussed together. They performed a variety of educational functions. The cathedral or college *grammar school* afforded an education to the youth, usually of aristocratic birth, who were destined for ecclesiastical preferment, and to such lay students as desired a more advanced school education. The head of the school was frequently known as the Scholasticus. In early times the custom arose of appointing the Scholasticus, on account of his learning, to the position of Chancellor. Hence later the two titles became practically synonymous. (Leach, Yorkshire Schools, I, xx; History of Warwick School, pp. 64; History of Winchester College, pp. 16.)

The *song school* of the cathedral or collegiate church was apparently quite distinct from the grammar school. (Leach, Yorkshire Schools, Vol. 1, pp. I, XIII, also p. 1.) It was under the direction of the Precentor and was attended by poor students who in return for board, lodging and tuition performed the duties of choristers. (Grant, Burgh Schools of Scotland, pp. 65.) In the records of the cathedral school at York for 1307, Richard Craven agrees to teach and board 7 choristers for 4 S. 8d. a week. (Chapter Act Book I, A. D. 1290, f. 25, b.; Leach, Yorkshire Schools, Vol. I, pp. 17.)

The Close school in Salisbury was founded by Bishop Prove for the education of the choristers of the cathedral and endowed with 35£ per annum. The choristers were eight in num-

ber and were clothed, instructed in Latin, writing and arithmetic. (Carlisle, Grammar Schools of England, Vol. II, pp. 757.) In the song school the poor students, from whom usually the ranks of the country clergy were recruited, obtained not only a musical but a general literary education. (Specht, 175.) In time its work became confined to that of elementary instruction. (Leach, York. Schools I, XIV & Hist. of Warwick Schools, pp. 71.) It became part of the regular duties of the song schoolmaster, *i. e.*, the assistant to the Precentor to teach "the petties," *i. e.*, reading and writing. At Paris the Chancellor of Notre Dame had control over the "Petty Schools" of the city. (Felibien, Hist. der Paris, III, pp. 449. Rashdall, *op. cit.*, II, p. 597.) The older song-school pupil, to whom Chaucer's little chorister appeals for a translation of the Latin hymn, explains his inability to give it, by saying

"I learne song, I can but smal grammere."

(Prioresses Tale, L. 84.)

Those of its students who needed more advanced instruction entered the grammar school. In 1312 a dispute arose between the grammar and song schoolmasters of Beverley, as to whether all the choristers of the church, or only the original number of seven, were to be admitted free to the grammar school. (Leach, York. Sch. I, pp. 94.) The question was settled in favor of the former alternative.

Much difficulty arose in determining at what stage in the course of study the work of the song school ended and that of the grammar school began. In Warwick, for instance, both schools claimed the Donatists or the pupils who were studying elementary Latin grammar. The settlement of the dispute is set forth in the Statutes of St. Mary of Warwick dating from the 13th century; "That all material for strife and disagreement which we learn has hitherto arisen between the Master and the Music Schoolmaster over the Donatists and little ones learning their first letters and the psalter may be put a stop to forever, after due inquiry in the matter and with the advice of our brethren, and so that the Masters of each of them may receive their due, and that undue encroachment of scholars on one side and the other may cease for the future; we decree and direct to be inviolably observed that the present Grammar Master and his successors shall have the Donatists, and thenceforward have, keep and teach scholars in grammar or the art of dialectic, if he shall be expert in that Art, while the Music Master shall keep and teach those learning their first letters, the psalter, music and song." (Leach, History of the Warwick School, pp. 65-66.) The question was settled differently at different times and places.

Under certain conditions where the church and its schools were small, both seem to have been under the direction of the same teacher. In 1377, for instance, John Pudsey was appointed to teach in the school at Northallerton because he was able to teach both grammar and song. (ad informandum pueros in gramatica et cantu sufficientem et ydoneum. Leach, York. Sch., II, 60-61.) Similarly Sir Edmund Marsh was appointed to teach the two departments at Howden in 1394 (Leach, *op. cit.*, II, 84). Leach suggests that the combination of the two schools was necessitated by the scarcity of teachers resulting from the ravages of the Black Death. (History of Warwick School, pp. 72.)

The song school was probably attended not only by the regular choristers, but by others who sought an elementary or a musical education (Grant, Burgh Schools of Scotland, pp. 65-66), and the latter seem to have paid fees. Hence probably the keenness of the above-mentioned contest between the two schools over the Donatists and hence the hostility of both, illustrated elsewhere (see pp. 262-263), toward rival schools.

Of the students of the grammar school, the regular clerical students for whom the school was primarily established, the "scolares canonici," held prebends, the income from which paid their expenses. (Specht, pp. 173.) Along with these 'scolares canonici,' who were frequently of noble birth, some lay pupils of equal rank were received. Alcuin specifically refers to the students at York before his time as being sons of the nobility, some of whom pursued ecclesiastical while others pursued secular studies. (Alcuini Vita. caput. II, Migne Pratrologia, 101, pp. 91; Leach, York. Sch., Vol. I, pp. 234.) The latter paid fees which in some instances were considerable. (Joannis Canaparii Vita S. Adalbert c. 4. Specht, pp. 179.)

Support of Poor Students. But in both schools there were frequently numerous poor students in addition to those members of the song school who supported themselves by acting as choristers. For the support of these various means were devised some of which are still employed. Some churches had large endowments for the support of poor students. The cathedral school at Bamberg, for instance, attracted many students because of the numerous mediæval scholarships and fellowships it was able to bestow. (Monach. Prifling. Vita Ottonis episc. Babenb. 1, 34, Pertz. Mon. Germ. SS. XII, 889; Specht, 197.) Bequests for the support of poor students at various schools were so frequent that it is not necessary to cite examples. Even the cities through which the wandering students passed had arrangements of various sorts for affording them food and lodging. In some there were regular endowments for this purpose

(Stiftung des Bischofs Heinrich von Speier in More's Zeitschrift für d. Geschichte des Oberrheins I, 136, Specht, 198). Some pupils received aid in return for participation in chantry services. (Surtees Soc. Test. Ebor. 1, 86; Leach, York. Sch., 1, 24.) Others earned money by carrying holy water to the sick. At Winchester a statute of the 13th century gave students the exclusive right to perform this service; "In churches which are near the schools of the city of Winchester . . . the holy water is to be given to be carried only by their scholars." (Statutes of Winchester 1295, Leach, History of Winchester College, pp. 40-41.) Students received money also for special services on festival occasions. (Quellen zur Geschichte der Stadt Köln II, 587, Specht, 177.) Some maintained themselves by begging.

These special privileges enjoyed by students naturally attracted to their ranks many of the idle and the unworthy. So numerous did they become that in France they organized into a society, calling themselves Goliards after Golias, their invisible head. (Giesebrecht, Die Vaganten oder Goliarden und ihre Lieder, in the Allgemeine Monatschrift für Wissenschaft und Litt. Braunschweig, 1853, pp. 29; Specht, pp. 198.) The number of poor pupils received was in some institutions strictly limited. At St. Peter's in Basle it was prescribed in 1233 that only 10 poor pupils were to be received. (Fechter, Geschichte des Schulwesens in Basle, 1837, pp. 11; Specht, 176.) Unscrupulous parents sometimes availed themselves of these generous provisions in order to relieve themselves of the support of their children. In a school regulation of Worms in 1260 it is stated that "The children of poor people which are sent to the school, in order that they might be supplied there with food, are not to be admitted to the A B C until they have paid at least 20 heller, and for the reason that only too often a crowd of such people had come to the school to whom the means of subsistence afforded by the school was a matter of greater importance than the learning." (Ordin. rector. scholar. Wormat. praescr. a. 1260 c. 4. in Schannat, Hist. episc. Wormat II, 129, nr. 7; Specht, 181).

The poor seem to have received separate instruction and seldom came into intimate relations with the 'scolares canonici,' or the aristocratic secular students (Specht, 181.)

Though the song and the grammar schools were distinct institutions, this did not preclude the pupils of the latter from obtaining in the former their instruction in music, just as, on the other hand, it did not prevent the pupils of the song school from continuing their studies in the grammar school. (Leach, York. Sch., I, LXIII.)

(5) *Private Collegiate Establishments.* Great dignitaries

sometimes maintained a college of ecclesiastics in connection with their private chapels. And here as elsewhere the college maintained a grammar school. "Every great man," says Stubbs (Lect. Med. Hist., p. 142), "had a great house and household with his chapel or collegiate church at his capital house and his school of clerks as well as pages." The household college of chaplains of Archbishop Theobald satisfied to some extent the need that was afterwards met by the university system. Archbishop A'Becket had among his chaplains a staff of professors on a small scale: this one skilled in canon law, that one in historic precedent; one to whom they looked when an opposite quotation was wanted, another who had pretensions to be a philosopher. (Stubbs, *op. cit.*, 143.) Much later in history we find the Earl of Northumberland employing his private college of priests in a variety of ways. On his household records they are listed as follows:—"a priest to be dean of my lord's chapel, a priest to be surveyor of my lord's lands, another to be secretary, one to be almoner, a sub-dean to keep the choir, a riding chaplain, a chaplain to the eldest son, a clerk of the closet, a master of grammar, a reader of the gospel, one to sing Our Lady's mass." (Antiq. Repertory, IV, 242.) In such households young noblemen and others often acquired the training requisite for a career as statesmen.

6. *The Scholasticus and the Clerical Control of the Schools.* The fact that the cathedral grammar school was likewise open to the laity had important consequences for the future of elementary and secondary education. As the students flocked to the cathedral school in continually increasing numbers, the Scholasticus became a supervisor and appointed others as teachers, first in the cathedral, and then in the supplementary schools established elsewhere in the diocese. Thus through growth of custom the Scholasticus came to be recognized as the official in control of the schools and teachers within the limits of the jurisdiction of the cathedral chapter. He issued licenses to teach, the prototypes of the university diplomas of later times. The decree of the Lateran council of 1179, already quoted, requires that the scholastics "should have authority to superintend all the schoolmasters of the diocese and grant them licenses without which none should presume to teach." It is important to note here the development of that clerical control of the education of the laity which is still noticeable in England, Germany and elsewhere. This assumed power of the Scholasticus or chancellor was not, however, undisputed. In 1375 the Scholasticus of York cathedral complained that Mr. Nicholas, of Ferriby, without permission of the former, was keeping a grammar school within the jurisdiction of the chapter "heedlessly and unjustly, to the gross prejudice and loss of

the Scholasticus, and Mr. John, of York, Rector of our Grammar School of York." (Leach, Y. S. I., 25.) Again, in the records of the Beverly Collegiate Church School similar instances occur;—"On Oct. 13, 1304, on motion of Mr. Thos. Brompton, rector of our school, Robert of Dalton, clerk, who unmindful of his salvation had dared to teach school in that town to the prejudice of the liberty of the church—was directed by the chapter to be warned to give it up in nine days or he would be excommunicated." (Leach, Y. S. I., 80m.) A petition presented to Richard II by the Archbishop of Canterbury, the Bishop of London and other clerics declares "that by the law spiritual and by immemorial custom the ordinance, the disposition and the examination of the masters of certain schools of the faculty of grammar . . . . belonged to the petitioners." In Hamburg, Germany, in 1402, the Scholasticus claimed control of the four writing schools established by the city council. In the struggle that followed the council was laid under the ban of the church from which it was freed only by defraying the costs of the contest and abdicating all right of erecting its own writing schools. "Lübeck, in a struggle with the clergy over the same question, was laid under a interdict. In 1418 the city admitted the right of the Scholasticus to direct the schools, to appoint and dismiss teachers. Further it agreed to hand over to the Scholasticus one third of the fees from the writing schools." (Fischer, Gesch. d. deutschen Volkschullehrerstandes I, 9-10.)

Canon VIII, of 1200, shows that some church officials were by that time making this right a source of income. It reads, "Let nothing be exacted for licenses to teach." The fashion set by some of the Scholastici of retaining the greater part of the emoluments of a position while delegating its duties to another seems to have spread, for canon XVII reads, "we ordain that if schoolmasters hire out their schools to be governed by others, they be liable to ecclesiastical punishment." The authoritative tone of the canon suggests to what degree clerical control had become established.

7. *The Precentor.* The Precentor, like the Scholasticus, claimed absolute control of the teaching of his particular subject within the cathedral district. In 1367, for instance, Mr. Adam, Precentor of the cathedral school of York, complained that "Whereas by immemorial custom the keeping school in the city of York for teaching boys singing, ought to be held in a certain place belonging to the cathedral church, ... divers chaplains, holy water carriers, and many others actually keep song schools . . . . in parish churches, houses and other places in York to the no small prejudice and grievance of the Precentor." (Leach, York. Sch., I, xxiii.) The Precentor,

like the Scholasticus, usually handed over the actual work of teaching to a deputy. The Richard Craven referred to on p. 257 was engaged by the Precentor not only to board but also to *teach* the 7 choristers.

(c) *Parish Schools.* The need of trained assistants in conducting religious services which in the cathedral and collegiate churches gave rise to the song schools, was felt also in the smaller churches and led to the establishment of parish schools. That the purpose of these schools was merely that of giving instruction in religion and in the music and ceremonial of the church seems to be indicated in the following decretal of Gregory IX. "Let every priest who has a cure, have a clerk, who may sing with him and read the epistle and the lesson, and who is able to keep school (scholas tenere) and to admonish his parishioners that they send their sons to the church to learn the faith; and who may teach them with all chastity." (Decret. Greg. IX, Lib. III, tit. I; Rashdall, Univ. of Europe, II, pp. 601) a gloss adds "scolas; for teaching boys the psaltery and singing." A 13th century statute of the diocese of Winchester urges upon the clergy the duty of maintaining these schools, "Let Rectors, Vicars aud Parish Priests see that the boys of their parishioners know the Lord's Prayer, the Creed and the Salutation of the Virgin and to sign themselves rightly with the sign of the cross; and the parents of the boys should be induced to let their boys, after they know how to read the psalter, learn singing also; lest by chance after they have learnt higher subjects they should be obliged to go back to this, or, being ignorant of it, should be always less fit for divine service." (Statutes of the diocese of Winchester, 1295; Leach, Hist. of Win. Coll., pp. 40, 41.) Where conditions were favorable and the need was felt the course of study of the parish school was expanded so as to afford more or less of a general education. An example of this is found in a parish school in Breslau in the 13th century. On the petition of the Dean and Chapter of Breslau, the Papal Legate, Guido, in 1257 appoints "that there may be within the walls of the city of Breslau near the church of St. Mary Magdalen a school in which little boys may be taught the alphabet, the Lord's Prayer and the Salutation of the Virgin with the Creed, psalter and seven psalms; they may learn there also singing, that they may be able to read and sing in the churches to the honor of God. They may learn also in the same schools Donatus, Cato and Theodulus and the *Rules for Boys.* (regulas pueriles.) If the boys wish to learn more advanced books, they must transfer to the schools of St. John in the castle or wherever they may wish. (Breslauer Urkundenbuch, ed. Korn, Breslau, 1870, p. 35. Rashdall, Univ. of Europe, II, p. 602.)

The above examples suffice to show what is confirmed by the further data we possess regarding the parish schools, namely, that in aim and character of their work it is impossible to draw a definite line of distinction between them and the schools of the cathedral and collegiate churches. Like the latter the parish schools were primarily established in part to supply the need for trained leaders and assistants or participants in the services of the church, and in part to afford systematic religious instruction. The ends to be accomplished in all three schools were essentially the same, and in attaining them a longer or shorter stretch of the same curriculum was followed.

As to the frequency with which schools were maintained in connection with parish churches during the middle ages opinions differ. Quite a number of the Roman Catholic writers such as Janssen, Drane and Bro. Azarias believe that a relatively large proportion of the people received a general education in the middle ages through the agency of the parish school. The arguments against this view are summed up in Sander, Geschichte der Volksschule, in Schmid, Geschichte der Erziehung (pp. 10-24).

These schools seem to have varied widely as to the amount of instruction which they afforded. The exhortations to the priests on this matter such as those just quoted suggest that in the smaller parishes there were frequently no schools at all, and that even where they existed the work was often restricted to training the young to intelligent participation in church services and in religious doctrine. (Fischer, Gesch. d. deutschen Volksschullehrerstandes, pp. 12-13.) That in many instances little beyond this was attempted is no reproach to the church. Before the invention of printing, books were rare and expensive. Ability to read was of little consequence to the poorer classes of the laity for the simple reason that there was practically nothing for them to read. (Fischer, *op. cit.*, p. 7.)

Book learning remained largely a peculiar possession of the clergy. "You Laymen," said Berthold of Regensburg, the great preacher of the 13th century, "cannot read as we parsons can." The vigorous growth throughout Europe in the 13th and 14th centuries of literature in the vernacular, indicates, however, that ability to read was becoming more common (Stubbs, Const. Hist. III, 369-371; De Mont. State Intervention, p. 18) though it should be borne in mind that some of the greatest poets of this period were like Wolfram von Eschenbach, unable to read.

The decretal of Gregory IX quoted above shows that the instruction was given by the parish priest or his assistant.

(d) *Other Schools, within the Ecclesiastical System.* The increasing educational needs of the time led to the establish-

ment of other schools than those directly attached to and maintained by the monasteries and the different classes of churches. But, although not immediately attached to churches, many of these were engrafted in the great international ecclesiastical system and were under clerical control. The beginnings of educational institutions in mediæval society outside of the church will be discussed in another chapter.

However the schools of the later middle ages may be classified, they all gave instruction in more or less of the same curriculum, consisting of an elementary course and that in the seven liberal arts. Excepting in some measure the highest institutions of learning subsequent to the 12th century, they were all alike grammar schools in that of necessity (Leach, Eng. Sch. of the Reformation, p. 105) by far the greatest amount of time and effort was devoted to Latin which continued to be the one gateway (Janua) to learning.

But, although as regards content of instruction these mediæval schools were all alike, those less immediately connected with the churches and monasteries may be advantageously classified according to their various means by which they were maintained.

(1) *The Schools as Affected by the Religious Beliefs of the Times.* The form which these educational institutions took was determined largely by the religious beliefs of the time and particularly by the belief in purgatory. It was held that one's sins condemned him not always to everlasting punishment but frequently to long periods of expiatory and purifying suffering in purgatory. It was believed further that this period could be shortened through the saying of masses. This is one of the reasons for the numerous and munificent endowments of monasteries and collegiate churches in the middle ages. They were great religious institutions, one of the purposes of the endowment of which was that of securing the welfare of the souls of their founders. (Leach, Eng. Schools at the Reformation, p. 47.)

(2) *Chantry Schools.* But there were comparatively few even among the nobility, who could afford to endow monasteries. Hence, instead of establishing a whole community of monks or priests, a man would bequeath property the income from which would support one or two priests to chant at stated intervals masses for his soul. Such an institution was a chantry. As the chantry priest had usually much spare time on his hands, he, sometimes at the request of the founder, sometimes on his own initiative, taught school. Hence a class of chantry schools. The post of chantry priest was apparently one of ease and comparative independence, at any rate one of the merits of Chaucer's faithful parson was that,

"He settë not his benefice to hyre
And leet his scheep encombred in the myre
And ran to Londone, unto seyntë Poules
To seeken him a chaunterie for soules
Or with a bretherhede to ben withholde."

Archbishop Islip complains of the clergy "That they wholly refuse as parish priests to serve in churches or chapels—though fitting salaries are offered them that they may live in a leisurely manner, by celebrating annals for the quick and the dead." (Constitutions, Johnson's Laws and Canons, II, 421.)

The manner in which school work was connected with the chantries can best be shown by an example. An extract from the will of Sir Edmund Shaa or Shaw reads as follows: "And I woll, that the other honest Priest" (the first being appointed to preach at Woodhead Chapel) "be a discreet man and conning in Gramer, and be able of connying to teche Gramer. And I woll that he sing his Masse, and say his other divyne Service . . . at souch an aulter there as can be thought convenient for hym, and to pray specially for my Soule, and the souls," etc. (enumerating certain others). . . .

"And I woll that the same connying Priest keep a Gramer School continually in the said Town of Stopforde, as long as he shall contyneue there in the said service. And that he frely, without any wages or salarye . . . except only my salarye . . . shal teche al mauer person's children, and other that will come to him to lerne." (Quoted in Carlisle, Endowed Grammar Schools of England, Vol. I, p. 125.)

(3) *Guild Schools.* But what was to become of the souls of those who had not the means to endow even chantries? Must they endure long ages of suffering for lack of prayers and masses? To avoid this it became a quite common practice among the middle and lower classes in this age of unions or corporations to form religious guilds one purpose of which was to secure the saying of masses for the souls of deceased members. (See, for examples, Toulmin Smith, English Gilds, pp. 67-68.) Each guild had its own priest who, sometimes, in addition to attending to the religious necessities of his patrons taught their children in school. The same thing was done occasionally by the merchant or craft guilds (Toulmin Smith, Eng. Gilds, CXXXIII) established primarily for the organization and protection of commercial and industrial activities respectively. (See, for example, the Gild of Tailors of Lincoln, Toulmin Smith, Eng. Gilds, pp. 182-183.) Hence a class of guild schools.

Sometimes the great merchant or trade guilds acted as trust companies managing the funds of an endowed school or chan-

try (Leach, Sch. Ref., p. 144), or seeing to it that the wishes of the founders were carried out. John Colet, for instance, conveyed the whole of his estate in London to the Mercer's Company in trust for the endowment of his school at St. Paul's. A free grammar school was founded at Holt, date unknown, by Sir John Gresham, Alderman of London. The statutes provided that the master and usher were to be nominated by the Fishmongers Company to whom he left the patronage and government of the school. (Carlisle, Eng. Grammar Schools, II, 180.)

The religious and other guilds were, we should mention in passing, the charitable associations, the benefit and insurance societies of their times.

(4) *Stipendiary Schools.* Property was sometimes left to endow a priest to assist in the services of a church or to say mass in honor of some favorite saint, frequently the Virgin Mary. Those holding such positions were known as stipendiary priests. Like the chantry priests they, sometimes on their own initiative or again in conformity with the wishes of the founder, taught school. For example, in the chantry certificate reports concerning Alton we find, "A stipendiary priest. Founded by one John Chawnflower to have continuance forever to the intent to assist ministration in the church of Alton and to teach children grammar." (Leach, Eng. Sch. at the Reformation, p. 90.)

(5) *Morrow Mass Schools.* Another of the great variety of ways in which schools sprouted out from the ancient and complex organization of the church is illustrated in the case of Pountfrett. Here there was an endowment for a morrow mass priest, that is, a priest who was to say mass early in the morning so that laborers going to work could attend. Among the other duties of this priest were those of surveying the mending of the highways and of teaching a grammar school. Commenting on this Leach (Y. S. II, XV), says, "Having got up so early the priest did other odd jobs such as acting as highway surveyor, while he not unfrequently eked out his time by teaching the early rising schoolboy, and so not a few grammar schools owe their origin to the morrow mass."

(6) *Hospital Schools.* Many schools originated in connection with hospitals, that is, almshouses. For example, in Carlisle (Eng. Grammar Schools, I, 557), we find concerning the grammar school at Huntingdon, that "The endowment now forms part of the revenue of the master and co-frater of the Hospital of St. John, founded—in the reign of Hen. II—for the relief of poor people and the keeping of a free grammar school at the cost and charge of the master of the said house." The almshouse and grammar school at Ewelme was founded

by the Duke of Suffolk and his wife Alice, the granddaughter of the poet Chaucer, in the reign of Henry VI for "two prestes and 13 pore men"—the second priest to be "a wele disposed man apte and able to teachying of gramer to whose office it shall long and pertain diligently to teche and inform childer in the facultie of gramer—without exaccion of any Scole-hire." (Carlisle, E. G. S., II, 301.)

The Extracts from the Chantry Certificates selected by Leach (English Schools at the Reformation, pp. 1-320), and the numerous records referred to by Specht (Geschichte d. Unterrichtswesens, p. 177, note 1), show how extensive both in England and on the continent were the provisions for school education in connection with these various religious foundations.

To this setting apart of landed and other property for securing the welfare of the souls of the dead a limit would sooner or later have to be set as the number of generations to be thus provided for increased. (See Leach, Eng. Sch. Reformation, p. 68.) In both England and Germany the coming of this crisis was hastened by a change of religious belief, the Reformation. The secularization of the property of these religious foundations is one of the most momentous events in the history of the schools in the period of the Reformation, and will be discussed later under that head.

XI. Influence of Mohammedan Learning.

At about the time when Christian mediæval learning had reached its period of greatest decline in the 9th and 10th centuries, Arabic Mohammedans were cultivating in their schools in Spain the learning which they had acquired in the last strongholds of Greek civilization of the East. Their work exerted a powerful and beneficent influence throughout Europe. At a time when in the rest of Europe few outside the church could even read or write, the cities of Moorish Spain were centres of a brilliant though short-lived civilization, with populous 'universities' whose membership included the most learned men of the age. The Mohammedan scholars opened the way for those of the Christians to a much more extensive acquaintance than before with the science and philosophy of the Greeks, especially Aristotle. Further, they combined with Greek learning that of other civilized peoples with whom they had come in contact, particularly the Hindoos, whose system of notation we use and still call Arabic. The Arabic scholars made not unimportant contributions themselves to this fund of learning. They collected and systematized in the field of mathematics and natural science as well as in philosophy. Our language contains evidence of both the extent and character of the Ara-

bic contributions to our civilization in such words as 'Algebra, alchemy, alembic,' etc.

XII. Lay Educational Institutions.

(A). *Influence of the 12 century Renaissance upon the Educational Life of the Middle Ages.* The 12th and 13th centuries are characterized by great progress in almost all phases of human activity. This vigorous onward movement not only produced marked changes in the work of the schools already existing, but it opened the way for the development of systems of non-religious, non-professional instruction outside of the pale of the church. Signs of the reappearance of systems of lay instruction are to be noted earliest among the noble and gentle classes.

(1) *Chivalrous Education.* One result of the lack of any permanent, powerful centralized government in Western Europe after the decay of the Roman empire, was that men were led to depend more upon isolation, upon military prowess and upon fortified strongholds as means of securing life, liberty and possessions. The weaker purchased security through the sacrifices of their independence to the strong. Thus developed the feudal system. The lord and his dependents dwelt upon the manor which in the darkest ages was practically an independent economic unit.

Previous to the invention of gunpowder the lord of the manor not only possessed in his castle a powerful means of defence in case of attack, but with his horse and his armor he was the man most formidable in battle. The horseman or knight thus becomes a prominent figure in early mediæval society. The romantic, adventurous, religious and altruistic enterprises of the Crusades brought this class into still greater prominence and led to the gradual evolution of an ideal of knightly character which found embodiment in numberless noble and picturesque forms in art and literature. In this way this ideal was made definite and permanent, so much so that it is vivid in the popular imagination even of to-day.

With the advance of civilization and the widening of social intercourse, social standards of knightly accomplishment became so high as to necessitate something approaching systematic instruction or school work. So definite were these standards and so widely acknowledged during the 12th, 13th and 14th centuries that this period may rightly be called "The Age of Chivalry." These standards were, as we should expect considering the relation of the knight to the rest of society, mainly physical and though in part æsthetic and even literary, were by no means bookish. The knight's estimate of mere book learning is expressed in an old Scottish ballad,

"We thynk thame verray natural fulis
That lernis ouir meikle at the sculis
Schir, ye mon leir to tyn and speir,
And gyde yon lyke ane man of weir."

The development of chivalrous education was furthered by the curious custom of fostering, by which children of a nobleman were sent to be brought up in the household of another, usually more powerful and eminent, noble. Thus we read in the biography of a mediæval knight. "When the child was seven years old they sent it to Joce de Dynanin at Ludlow castle to teach and nourish; for Joce was a knight of good accomplishment. Joce received him with great honor and affection and educated him in his chambers with his own children." Fulke, the younger in the next generation, was taken by King Henry II as his foster child and was nourished and educated with the young princes of whom John proved a bad foster-brother. The great barons sought to form alliances of this kind with the king as with his great ministers and other men of power." (Wright, Domestic Manners and Sentiments in England, p. 271.)

The purpose of this education, during the period when the ideals and customs of chivalry prevailed among the upper classes, was the development of the well known traits of knightly character: prowess in battle, physical strength and skill, courtesy, grace of manner, courage, honor, generosity, magnanimity. To these were added pleasing, social accomplishments such as skill in composing and singing songs, in dancing, etc.

The duties of the 'Maistyr of Henxmen' ("young gentylmen, Henxmen,—VI Enfauntes, or more, as it shall please the Kinge") to his pupils at the court of Ed. IV are stated as follows, "to shew the schooles of urbanitie and nourture of England, to lerne them to ryde clenely and surely: to drawe them also to justes; to lerne them were theyre harneys; to have all curtesy in wordes, dedes and degrees; diligently to kepe them in the rules of goynges and sittinges, after they be of honour. Moreover to teche them sondry languages, and othyr lerninges vertuous, to harping, to pype, sing, daunce; and with other honest behaviour and patience." (Liber Niger in Household Ordinances, p. 45. Furnivall, Manners and Meals in Olden Time, II.)

Perhaps the best account of the results of a complete chivalrous education that we have is found in Chaucer's description of the squire,

"Wel cowde he sitte on hors, and fairë ryde.
He cowde songes make and wel endite,
Juste and eek daunce, and wel purtreye and write—

Curteys he was, lowly and servysable
And carf byforn his fader at the table."

Great emphasis was laid upon manners. This feature of the education of the upper and middle classes is reflected in Chaucer's description of the knight, the squire and the nun. The knight "lovede chivalrie.

Trouthe and honour, fredome and *curteisye*."

The same was true of the nun.

"In curteisye was set full muche hire leste."

The ballad literature in numerous passages gives evidence of this tendency in the education of the time.

"It was the worthy Lord of Leaven
he was a lord of high degree
he had noe more children but just one sonne
he sett him to schoole to learne curtesie."
Percy Folio MS., Vol. I, p. 182, ed. 1867.

This feature of the aristocratic education seems to have been taken over into the developing middle class education, and gave rise to a curiously large number of popular books on manners and etiquette. As we have seen, great attention was paid to manners in the monastic and church schools of the time (see p. 256). Books on deportment were used as texts (*e. g.*, The 'Rules for Boys,' mentioned on p. 263).

Winchester College, established during this period, has as its motto "Manners makyth man."

From 7 to 14 the boy acted as a page, waiting upon the lords and ladies of the household. In the society of these he acquired some of the finer knightly accomplishments, habits of courtesy, distinction of manners. Such literary training as was felt to be requisite was obtained frequently under the instruction of the chaplain.

From the age of 14 on, the youth was in attendance upon the knight, and received a training in the more manly exercises of the hunt, the joust and in actual warfare. Upon the completion of this period the squire became a knight. Initiation into this degree was often accomplished by impressive religious rites.

(2) *The Extension of Means of Education among the Middle and Lower Classes.* The breaking up of the condition of industrial and commercial paralysis which prevailed in the early middle ages (see p. 269) was accelerated by the Crusades. The sight of strange lands, the contact with a variety of strange peoples some of them highly civilized, acquaintance with the various ways of living, the customs, religious beliefs could not

fail to so broaden the sympathies of the Western Europeans and their outlook on life as to work a momentous change in life and thought. Concomitant with this intellectual awakening and related to it, both as cause and effect, was the restoration of order. The Northmen, the scourge of the preceding centuries, had become transformed into the Christian and civilized Normans. The wise and strong rule of the Ottos in Germany had done much to repress lawlessness and injustice.

The influence of these movements upon the aristocracy and the church was a mixed one. The enormous expense of the expeditions impoverished the former, the failure of the enterprises affected the prestige of the church. Upon the middle and the lower classes, however, the influence of these great movements was beneficial. Not only did every serf (Schuster, G. G. V. & O. I 380) who returned from a crusade become a freeman, but many of those who remained. The bustle and stir of the times, the more abundant and wide-reaching intercourse among peoples broke up the isolation of manorial life and accelerated the development of the industries and commerce. (Kaemmel in Schmid's Encycl. d. Erz. u. Unt. 4, p. 1066.)

The intercourse of the people of the East and the West greatly increased among the latter, the knowledge of and taste for a variety of commodities which, at first luxuries, soon came to be looked upon as the necessities of life. These included not only important natural products such as rice, Indian wheat, sugar cane, plums, apricots, lemons, watermelons; but manufactured articles, muslin, satin, damask, fine leather, rugs, tapestries, pottery, and important inventions such as the windmill. (Webster, General History of Commerce, pp. 53-54.) Not only did the Crusades create a demand for these things but they developed that skill in navigation and that knowledge of trade routes which made it possible to satisfy it. The result was a period of great commercial activity. Parallel with this development of commercial activity, and springing from like causes, was a vigorous growth of the industries. The growth of civilization increased the demand for manufactured articles and an increasing proportion of the population from being mere general agricultural laborers became skilled workmen.

The conditions both of industry and of commerce led to the grouping of those engaged in them into towns or cities. In accordance with the necessities and customs of the times the owners of land in these cities formed a union or guild, the citizen or merchant guild for the greater security of life and property and the better regulation of city life. (Toulmin Smith,

English Gilds, XCIII.) Through these they acquired a considerable measure of political freedom.

City Grammar Schools. The significant point in all this is the coming to the front in the society of Western Europe of another class, the so-called burgher or citizen class which from now on is to take on the whole an increasing share in the direction of human affairs. The increasing wealth and leisure of this class created a corresponding demand for a liberal education. The cathedral and collegiate schools not being sufficiently numerous to meet this demand other schools were established at points within the city or diocese convenient for their patrons. (Edgar, Hist. of Ed. in Scotland, p. 112.) Though maintained by the municipality or by private endowment these schools were usually considered as annexes of the central cathedral and college schools and hence under the control of the Scholasticus. In numerous instances, however, this authority was acknowledged only after a determined struggle. (Specht, Gesch. des Unterrichtswesens, p. 252-253; see also pp. 62-64.) In 1508 "the Provost and the Burgesses of Glasgow objected to the presentee of the Chancellor of the diocese, and claimed that the right of presentation to the Grammar School belonged to themselves. They did not succeed in their claim." (Diocesan Register of Glasgow, Vol. II, p. 17; Hutchison, High School of Stirling, p. 7.) In Aberdeen the quarrel after lasting nearly half a century was decided in favor of the town. (Burgh Records of Aberdeen; Spalding Club, pp. 50, 151, 277, etc.; Hutchison, *op. cit.*, p. 7.) In Hamburg the struggle over the same question lasted nine years. (Lappenberg, Hamburgisches Urkundenbuch I, 652; Specht, p. 253.)

In these city Latin grammar schools sometimes only the more elementary stages of the conventional course of study were taught. Their subordinate relation to the cathedral school was shown in that, on festival occasions, all the pupils assembled within the walls of the latter. Not only were these outlying schools under clerical control but their teachers were members of the clergy. Nevertheless in this merely local separation of the school from the church grounds we may trace perhaps the faintest beginnings of lay school instruction. From the middle of the 13th century on, even the smallest cities had schools in which children destined for lay careers could obtain an elementary education. (Specht, p. 254.)

(3) *The Rise of the Folk School.* While the Latin grammar schools, which still survive as our secondary or high schools, were thus beginning to break away from this intimate association with the church, the germs of the great modern folk-school were slowly assuming definite form among the mass of the people in the larger centres of popnlation. For the folk-school,

though in various features of its organization and its methods it continued the traditions of the higher and older schools of the clerical and of the upper classes, was essentially an outgrowth not of the church or of the state, but of the thriving industrial and commercial life amidst the rank and file of the people. There were elementary schools connected with the churches and the monasteries, but they were designed primarily to prepare for the grammar school rather than to meet the educational requirements of the everyday life of the ordinary citizen. (Fischer, Gesch. d. deutschen Volksschullehrerstandes, Vol. I, p. 8.) These schools greatly increased in number after the invention of printing. They were the result of the systematization of the activities of the hitherto unlettered classes in learning and teaching the fundamental arts of reading, writing and calculation. They were originally private enterprises, and the great majority of them remained so. Their character, determined as it was solely by local conditions, was extremely varied. This is indicated by the great number of different names by which they are known. They ranged from the dame, petty, hedge (Winkel), and girl's (Maidlin) schools to the semi-professional writing and reckoning schools which seem to correspond to the business schools and colleges of today. These will be discussed in another paragraph. Under favorable conditions the work in some instances became so advanced as to encroach upon that of the grammar school. It was found necessary in Edinburgh in 1519 to restrict the course of study in the folk-schools to "grace-buik, prymar and plane donatt." (Burgh Records of Edinburgh, quoted in Grant, Burgh Schools of Scotland, p. 63.) These schools of the vernacular were distinguished further through the fact that they were frequently conducted by women. (Edgar, Hist. of Scotland, p. 120.) Hence the name, 'Dame School.' The story of the school in the Reformation and subsequent periods centres about the gradual rise of these folk schools into great state institutions.

Writing and Reckoning Schools. The vigorous development of commerce created a much greater demand than formerly for instruction in writing and arithmetic. Provision for this need was made occasionally even in the ecclesiastical schools. For instance, in the statutes of the Rotherham College school the following passage occurs: "As that land sends forth many youths endowed with bright and acute minds who do not all wish to attain the high dignity of the priesthood, that they may be better fitted for the mechanical arts and other worldly concerns, we have established a third fellow skilled in the art of writing and in the science of arithmetic." (Leach, York. Schools, II, 110.) Again at Acaster in 1483 there were schools

connected with the church, "Three divers masters and informators in the faculties underwritten—one of them to teach grammar, another to teach music, and the third to teach *to write and all such things as belong to the scrivener's craft.*" (Leach, York. Sch., II, xxvii & p. 89.) But more frequently this instruction seems to have been acquired privately or in lay writing or reckoning schools taught often by professional scriveners or accountants. (Sander, in Schmid's Geschichte d. Erziehung, Vol. 5, sec. 3, p. 13.) In some instances these schools were maintained by the municipality. In Germany in 1262 the city council of Lübeck had wrung from the clergy permission to establish four writing schools wherein only German, reading and writing were to be taught ("dar men allenen schal lernen kinderen lesen unde scryven in dem dudeschen unde anderes nerghen ane." Chronik von Lübeck, Fischer, *op. cit.*, p. 9).

(4) *Private Tutors.* In wealthy and aristocratic families private tutors were employed in the elementary instruction of the children. (See pp. 261, 271.) John of Salisbury, in the 12th century, "received the children of noble persons to instruct." (Metalogicus, II, 10, p. 804; Poole, *op cit.*, p. 208.) Reference to tutors is made in 1410 in the decision on the famous Gloucester case. It reads, "If a man retain a master in his house to teach his children he damages the common master of the town, yet I believe that he has no action." (De Montmorency, State Intervention in Eng. Ed. pp. 51-52.)

(5) *The Status of the Teacher.* The directors of the grammar and song schools held, as already noted, positions of great dignity and influence, but they soon came to be rather school directors than members of the teaching profession.

Previous to the Reformation the teachers in the various classes of grammar schools were as a rule clergymen. (Edgar, Hist. of Ed. in Scot., p. 128.) The clerical and teaching professions were not definitely separated until about the time of the Reformation. Indeed grammar school work in England is still, to a considerable degree, carried on by clergymen.

The mediæval grammar schoolmaster was frequently distinguished by his learning from his fellow priests. As the title 'Magister or Master' indicates, they were sometimes graduates of universities. Those who had not attained the above degree had the title 'Sir,' now peculiar to knights and baronets.

> "The pure priest thinkis he gets nae richt
> Be he nocht stylit like an Knycht
> And callit 'Schir' before his name
> As Schir Thomas and Schir Williame."
> (Sir David Lindsay. Edgar. Hist. Ed., 125.)

Just as the superior learning of the Scholasticus led to the

union of his office with that of Chancellor, so in later times the learning of the schoolmaster was utilized in carrying on the business of the state or municipality. For instance, Wm. of Travernent, rector of the schools of Haddington was, in the 14th century, made 'Clerk of the Cocket' and thus put in control of the customs officials of his district. (Grant, History of the Burgh Schools of Scotland, p, 11.) Robert Henrison, the poet schoolmaster of Dumferline in the 15th century, was a notary public. Early in the 15th century Johannes Rothe non Cruzceborg is styled "ein prister unde ein cappellan des bischofis . . . . und et zwanne ein stadschriber zcu Isenache unde darnach ein tumeherre unde darzcu ouch schulmeistir des stiftis unsir liebjn frowin kerchin im der vor genantjn stad." (Heinrich, Johannes Rothe's Passion. Breslau, 1906, p. i. pp. 174.) Schoolmasters are found among those appointed by the pope to arbitrate disputes. (Grant, *op cit.*, pp. 9-10.) The records of the Beverley Grammar School in the 15th century show that William Hardynge, schoolmaster, was elected one of the twelve governors of the town. (Leach, Yorkshire Schools, Vol. I, p. 104.)

The grammar school over which the above-mentioned teachers presided is the institution which persists in the high school. The status of the teachers of the earlier forms of the elementary school such as the reading, writing or dame school was far different. They were private institutions and taught frequently only the bare necessities of learning to the children of the poorer classes. The fees were so meagre that the teachers sometimes attempted to conduct the school and carry on a trade at the same time. A Bamberg municipal regulation of 1490 forbids the teachers to carry on any other business while the children are in school. Another forbids any one teacher from enticing away the pupils of another. On the whole the life of a teacher of a lay, private elementary school, was usually a hard one. (Fischer, Gesch. d. deutschen Volkschul., pp. 11-17.)

(6) *Judicial Confirmation of the Right to Teach.* The schools of the Pre-Reformation period are distinguished from those of later times in the completeness of their subjection to clerical control. "Whether," says Parmentier (Hist. de l'Education en Angleterre, p. 203), "the schools were created by religious orders, by the secular clergy, by the kings or the gilds, their organization was about the same. They were all equally under the supervision and direction of the church which alone furnished the masters for them."

Instances of rebellion against the authority of the clergy in school matters have already been noted. The famous Gloucester School Case led, in 1410, to a declaration from the English

bench of the right to teach as a doctrine of the common law. Two masters who had been appointed to the Gloucester Grammar School by the Prior of a neighboring monastery brought an action of trespass against a master who had ventured to teach another school in the same town. In the decision it was stated that the defendant had committed no offence against the common law of England, that "To teach youth is a virtuous and charitable thing to do, helpful to the people, for which he cannot be punished by our law." (De Montmorency, State Intervention in Eng. Ed., pp. 50-57.)

(b) *The Craft Guilds as Educational Institutions.* The rise in the social scale of those engaged in manual labor meant an increased demand from this class also for general culture. For, as was the case with the artisans described by Chaucer (Prol., v. 473), "catel hadde they ynough and rente."

This general culture was acquired not only in the schools already described, but some measure of it at least seems to have been acquired along with the technical education afforded in the craft guilds. Because of this and because these guilds seem to have been the models for certain features of the organization of nniversities, they deserve some attention here.

It is significant that the Latin name of these corporations is "scholae," *i. e.*, schools, and that the regular members were known as "magistri," *i. e.*, teachers. (*c. f.* Willmann in Rein. Ency. Hand., IV, § 5, pp. 793-794.)

Throughout the darkest period of the middle ages the traditions of skilled handiwork were preserved largely in the great monasteries such as Fulda, Reichenau, Corvey, St. Gall (Schuster, Geheime 'Gesell., etc., Vol. I, p. 398). The English monk Dunstan, in the 10th century, was so enthusiastic and skillful a worker in iron that he figures in folk lore as one who had mysterious dealings with the supernatural powers. As Archbishop of Canterbury he directed the priests to instruct the youth in trades. (Hook, Lives of the Archbishops, I, 419.)

Among the arts thus cultivated in the monasteries was that of ecclesiastical architecture, an art brought later by mediæval artisans to the highest degree of excellence. Many of the leaders in the monastic world were enthusiastic architects. Ratgar, one of the early abbots of Fulda, employed his monks so vigorously in building that they appealed to the emperor for relief. (Mullinger, Schools of Chas. the Great, p. 140.)

During the 11th and 12th centuries the monks found themselves unable to cope with the demands for the erection of churches and monastic buildings. Hence they were forced to call in the aid of laymen. Where a building required several years for its construction these workmen were organized into a

lay brotherhood collateral with that of the monks. New members were instructed in the technique of the art. Later when the interest of bishops and abbots in building enterprises waned, the lay master builders separated themselves from the monasteries in which they had been educated and undertook independently great building contracts. This occurred at a time when the cities were rising to a position of proud and conscious independence. Citizens, as formerly kings and bishops, took pride in adorning their city with magnificent buildings. (Schuster, *op. cit.*, I, pp. 400-403.) National, religious and individual yearnings and aspirations of the period of progress found expression in a new style of architecture, the Gothic.

The vastness and the multiplicity of artistic detail in the great Gothic cathedrals taxed the powers of the lay builders to the utmost. The large numbers of masters and apprentices employed on these structures organized into guilds, in which the knowledge and skill requisite to the practice of the trade was handed down from master to apprentice. The elaborate ornamentation of the Gothic architecture, the mechanical difficulties to overcome, must have necessitated a study of design, of mechanics and of geometry of high cultural value. (Schuster, Geheime Gesell., etc., 396-404.) Similar in its influence was that pride in workmanship which seems to have been fostered under the guild system. The workmen were divided into three classes, the apprentices who were learning the trade, the fellow who had learned all that the master could teach him but who still worked with him, and the master who practised the trade as an independent workman and who gave instruction to apprentices and fellows.

Résumé and Conclusion on Mediæval Schools and Schoolwork.

Owing to the dominance of barbarian races and the instability of the political foundations of society preceding and during the middle ages, the energies of men were employed more and more exclusively in the bare maintenance of existence, and civilization and culture rapidly declined. The non-professional schools in which this culture was cherished and perpetuated ceased to exist throughout the greater part of Western Europe. The clergy of the Christian Church had risen to a position of religious, moral and intellectual leadership and more or less of the culture of the Roman schools, which had assumed a definite, fixed form as the seven liberal arts, was found to be indispensable in their professional training.

This training was afforded in schools connected with the monasteries and with the cathedral, collegiate and later even

with the larger of the ordinary parish churches. The work of these schools varied greatly from place to place and from time to time. In some only the bare essentials of the elementary course were taught. In the great schools the entire course including the subjects of the quadrivium was given.

As society gradually regained stability of organization and laymen began again to feel the need of systematic instruction in more or less of the liberal arts, they obtained it in these church schools. The growing demand of the lay classes for liberal education was met by the multiplication of these church schools which, as regards means of maintenance and external connection, may be roughly classified into chantry, stipendiary, guild, morrow-mass and hospital schools.

The fact that practically all the learning of the time was preserved in the Latin language made Latin grammar the main subject of study. As to content of course of study, the church schools may be divided into grammar and song schools. The latter, designed primarily to train choristers and assistants in the church services, gradually assumed in the great as well as in some of the small churches the character of elementary schools, teaching reading and writing and other subjects fundamental to the work of the grammar school.

The faint beginnings of the secularization of the schools may be found in the formation in larger centres of population of annexes to the church or monastic schools which were maintained more or less by the city and are known as the burg or city grammar schools.

As a result of the development of commerce and industry the wealthy citizen or burgher class rose to a position of power and influence side by side with the nobility and the clergy. The busy life of the mediæval centres of commerce and industry gave rise to educational needs of a more immediate and practical character than those met by the traditional course of study of the grammar schools. The systematization of the efforts made to satisfy these needs brought into existence a number of schools which have been imperfectly classified as writing, reckoning, girls', dame and hedge schools.

The grammar school may be said to survive in the high school of to-day. The common public school of to-day, inasmuch as it prepares for the high school, may be considered as the descendant of the mediæval elementary or song school; inasmuch as it meets the more essential of the educational needs of the mass of the people it is the modern representative of the reading, writing, reckoning and other folk schools which originated in the middle ages.

The conditions of the early mediæval period being unfavorable to creative work in literature or science, the traditional

course in the seven liberal arts was the more closely adhered to and school procedure became to a high degree formal. Yet among the teachers of this long period were many able and even brilliant men, and in the work of the best schools the principles of the inductive method, of apperception and of correlation seem to have been more frequently observed than is generally believed.

I wish to express my appreciation of the advice and encouragement afforded me in the prosecution of this study by President Hall and Professor Burnham. In the unravelling of knotty points in mediæval Latin much aid was derived from the suggestions of Dr. Theodate L. Smith. For the opportunity of examining various rare books I am indebted to Dr. Louis N. Wilson.

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LITERATURE.

Infant Mortality, a social problem, by GEORGE NEWMAN, with 16 diagrams. Methuen & Company, London, 1906. pp. 356+40.

This book is a very comprehensive and careful study of the subject, more so than any other in the English language. It is methodic and systematic and treats of the following topics: Present Position and Incidence of Infant Mortality, Distribution, Mortality in Great Britain, the Fatal Diseases of Infancy, Ante-Natal Influences on Infant Mortality, the Occupation of Women and Infant Mortality, Epidemic Diarrhœa, the Needs of Domestic and Social Conditions, Infant Feeding and Management, Preventive Methods (1) The Mother, Preventive Methods (2) The Child, Preventive Methods (3) The Environment.

Schule und Brot, von HELENE SIMON. Voss, Leipzig, 1907. pp. 90.

This vigorous little monograph opens by setting forth the necessity of natural food for infants. Next follows a discussion of the problem of school feeding as it is represented in Germany and elsewhere and the effects of different kinds of food. Another chapter is given to the school canteen of Paris and the Volks kitchen, with a brief history of the same. Then follows the discussion of under-nutrition in England and the propositions to remedy the evil. The author's conclusion is that bread comes before school, that there should be public regulation of school feeding and that large responsibility is placed upon the parents. The outlines of a desirable law covering all present forms of the evil are hastily sketched.

Körperliche und geistige Entwicklung eines Kindes in biographischer Darstellung nach Aufzeichnungen, von MILICENT WASHBURN SHINN. Bearbeitet und herausgegeben von Prof. W. Glabbach und G. Weber. Gressler, Langensalza, 1905. pp. 645.

Miss Shinn's thesis on the physical and mental development of the child is here translated into German with a number of additions and supplemental matter prepared with the aid of the author. The two translators well compare the book in value and thoroughness to that of Preyer. The work as a whole is too familiar to American psychologists and educators to need any further review in its new form.

The Paidologist, the Organ of the British Child-Study Association. Norman, Sawyer & Co., London, March, 1907. Vol. IX, No. I, pp. 35.

This number contains In Memoriam (Dorothea Beale); Children in Literature, by Mary Innes; Color Sense of Young Children, by Will S. Monroe; Infancy and Schools, by Kate Palmer; Reviews; Branch Reports; Recent Development of Child-Study in the United States, by Theodate L. Smith; The Conference Arrangements and Council Agenda.

Sexology. Edited by Wm. H. Walling, M. D. (The Family Medical Edition.) Puritan Printing Company, Philadelphia, 1904. pp. 232.

The author says, "We present this work with pardonable pride, believing it will be the means of saving many lives and a vast amount of

suffering and needless unhappiness." The full page portrait of the author, who is a professor of gynecology in an Eastern College, indicates him to be a kindly man. His point of view is eminently well meant. He tells boys that "vice is a creature of such hideous mein . . ." He treats of youthful vice, gives letters of his patients, whom he seems to have very greatly helped, tells how they do things in Germany and Holland, quoting a number of names from these and other countries, enlivens his pages with striking anecdotes and compares the sexes in an original way, both in prose and poetry, describes the causes of sterility, the physiology of pregnancy with plenty of practical precepts for child-birth, and finally gives some good conjugal principles and truths, ending with the excellent one, the only recipe for "permanent happiness in wedlock, Christianity."

The General Need for Education in Matters of Sex. Published by the Chicago Society of Social Hygiene. Chicago, 1907.

This is the most valuable and suggestive little pamphlet we have yet had upon this subject, which is at last beginning to attract the attention it deserves. It is composed of brief essays by ten authorities and is published by the Chicago Society of Social Hygiene at the modest price of twenty-five cents. It is very plain and should be in the hands of every teacher.

Familienforschung und Vererbungslehre von ROBERT SOMMER. Barth, Leipzig, 1907. pp. 232.

This valuable methodology of study upon heredity and family pedigree discusses such problems as family, race, psychopathic degeneration, individual talent and insanity, criminality, development, discipline, the loss of inheritance, the methods of investigating families, coats of arms as a part of genealogical drafting and physical and psychological investigations from the standpoint of heredity, the history of a family from the 14th to the 20th century, family romances, family consciousness, regeneration and nobility. This work is directly designed to develop family pride, to give it an intelligent basis and to make it effective for moral, social and hygienic life. It is a unique book with peculiar merits and, it must be admitted, not without defects that are inseparable from a so novel attempt.

Commercial Raw Material, their Origin, Preparation and Uses, by CHARLES R. TOOTHAKER. Ginn & Company, Boston, 1905. pp. 108+9.

Here is indeed something new and strikingly suggestive for education, although whether it belongs more in the field of geography, commerce or contemporary history might be a matter of debate. Here are fifty maps of commercial distribution of perhaps a hundred or two commercial products. In the study of these latter our schools are far behind the best in Europe. This volume contains not only the locality, but the origin, the process of preparation and the uses of the more important commercial materials. The maps each cover a page, and those representing the world and all the areas producing wheat are colored green with an intensity proportionate to the yield of wheat. Corn is treated in the same way and followed out through its husks, leaves, cob, its uses for food, dextrine, glucose crop, sugar, corn oil, gluten, etc. Upon some maps several of these products are represented by different colors and there are occasional illustrations of processes. The range of topics considered includes the more important commercial products of the animal, vegetable and mineral kingdom. The book is a valuable thesaurus of information about all sorts of things.

Die Entwickelung der zeichnerischen Begabung, neue Ergebuisse auf Grund neuer Untersuchüngen, von STUDIENRAT DR. GEORG KERSCHENSTEINER. Carl Gerber, München, 1905. pp. 508.

This sumptuous work with 800 figures and forty-seven chromos is one of the most interesting and elaborate yet produced upon this subject. The author treats the development of the ability to draw without systematic outer influence, tracing the development of man, of animals, plants, industries, space and ornament. He then traces the development of this talent as influenced by instruction in school, treating of the material, the physical and the psychological conditions, certain demands of art, natural gifts for drawing together with suggestions for the practice of the art.

The Short Story, its place and structure, by EVELYN MAY ALBRIGHT. The Macmillan Company, New York, 1907. pp. 260.

The aim of this book is not to trace the origin or the development of the short story, but to set forth some standards of appreciation of what is good in story writing, illustrating by the practice of the masters as contrasted with amateurish failures. Hence, the work treats of gathering material, the motive as the source of plot, the plot itself, mechanism, unity of impression, the title, characterization, dialogue, setting, realistic movement, fancy, the emotional element and the spirit of the author. To this are appended lists of reading and suggestions for assignment of stories and constructive exercises, together with a bibliographical note citing other literature upon the same subject as this book. The literature under the reading list is distinguished as motive and various plots, viz., the detective, ingenious and problem plots, together with plot unities, dramatic sub-divisions, impressionism, character sketches, a series of development of character, how it seems in emergencies and in contrast, literature illustrating the dialogue, setting, dialect, stories of fancy, love, pathos, humor and child life. The book is the embodiment of a very happy thought. The author has read widely and remembered well and attempts to bring others to her standpoint. Considering the fact that it is one of the first and decidedly the most ambitious effort in the field, it is highly praiseworthy. Nevertheless, the honest reviewer must admit that it is rather light and a little gossipy, and that the feminine standpoint, though unintended, is too evident.

Das moderne Amerikanische Besserungssystem, by PAUL HEER. Kohlhammer, Berlin, 1907. pp. 455.

The author has visited America and been greatly interested in our reformatory institutions. In the first chapter of his book he gives the history and theory of the new reformatory, beginning with the Cincinnati Congress of 1870 and ending with a very full description of Mr. Brockway and his methods at Elmira. The next chapter is devoted to the organization of these institutions, their organic law, the age of the convicts, the nature of their offences, their previous criminal record and various other statistical data, but it is the indeterminant sentence which chiefly impresses Dr. Heer. This view implies that the offender is morally ill and the institution a hospital in which he must remain until he can be discharged cured. Another important chapter is devoted to the treatment of convicts, the house, marks, daily routine, correspondence, visits, discipline, food, work, school methods, religious service, reading, physical exercise, museums, societies. He then discusses the various stages of enfranchisement, the parole, the periodic reports to the authorities, the recall of those provisionally set free and at last, the final and complete freedom. An-

other chapter is devoted to the general results of this system, to its criticisms abroad and at home and lastly, comes the suggestions for the appropriation of this system or of certain dominant features of it into Germany with maximal regard for existing conditions there. The so-called Elmira system has never had a better and more discriminating presentation and criticism.

A History of Manitoba and the Northwest Territories. For use in public schools. By D. M. DUNCAN (Gage's 20th Century Series). Gage & Company, Ltd., Toronto, 1903. pp. 140.

This little school book is not without striking lessons by way of contrast. Most of us would say that Saskatchewan, Assiniboia, Alberta, Athabasca and Manitoba had no history, and that for the school-children here history must consist in studying the story of England, United States and even Greece and Rome. This little book, however, presents an admirable story of the Indians in the northwestern part of Canada, a good story of the development of the Hudson Bay interests, of the great explorers, the relations of traders and Indians, the fur companies, the trip up to the Arctic, and the Red River Rebellion which ended with the execution of Riel. This takes the pupil into a totally different atmosphere from that we are accustomed to associate with history.

Once-Upon-A-Time Stories, by MELVIN HIX. Longmans, Green & Company, New York, 1907. pp. 105.

Here are eleven interesting little stories printed in very large type and copiously illustrated, well adapted for the use of children: They are The Little Red Hen; How the Bean Got its Black Mark; Titty Mouse and Tatty Mouse; The Old Woman and Her Pig; The Mouse that Lost Her Tail; Cut-cut and Peep-peep; The Three Pigs; The Story of Chicken Little; The House that Jack Built; Golden Hair and the Three Bears.

From Trail to Railway through the Appalachians, by ALBERT PERRY BRIGHAM. Ginn & Company, Boston, 1907. pp. 188.

The author holds that geography in the schools must return to human interests and this without undervaluing physiography. He therefore takes a trip from Boston through the Berkshires, over the Mohawk, Hudson, Erie Canal, New York Central, over the Pennsylvania Road through the Ohio Valley, round through Cumberland Gap and home again. His book contains many pictures illustrating the progress of transportation and locomotion and presents many interesting scenic views and even historical personages, in all 74. It is an excellent work and unique presentation of method of travel.

History of the Pestalozzian Movement in the United States, by WILL S. MONROE. Bardeen, Syracuse, 1907. pp. 244.

Professor Monroe has done a very excellent service in writing this book with its nine papers, bibliography and dedication to Earl Barnes. Its chapters are entitled Spread of Pestalozzianism in Europe; William Maclure, First Disciple of Pestalozzi; Joseph Neef; Coadjutor of Pestalozzi; Neef's Plan and Method of Education; First American Pestalozzian School at Philadelphia; Pestalozzian School in the New Harmony Community; Pestalozzianism in New England; Pestalozzianism at the Oswego School; William T. Harris and the Schools of St. Louis; Pestalozzian Literature in the United States; Bibliography of the Pestalozzian Movement in the United States.

Adjustment of High School Work to the Needs of the Community, by GEORGE E. MYERS. In the Atlantic Educational Journal, Baltimore, April, 1907. pp. 1-9.

This very brief article presents a new and pregnant point of view. It is an account of various attempts made in this country in high schools to fit for life rather than to fit for college. The problem in the some 25 high schools referred to was to adjust to the life and work of the immediate environment of the school so that those who leave at any time shall be better fitted each year to succeed in life. Some of these schools, therefore, lay great stress upon domestic science, even to the prejudice of Latin and Greek, road-building, special kinds of manufacture, of mining, etc.

The Efficient Life, by LUTHER GULICK, M. D. Doubleday, Page & Company, 1907. pp. 197.

This book is dedicated to the president of the United States, who sometimes leads the simple, often the strenuous, but always the efficient life. Its author is the vigorous head of physical training in New York City, a man of very suggestive and incisive mind, who writes in a pregnant, aphoristic style that shows no great reverence for scholarship, but is pervaded with the highest admiration for practical results. It is a kind of Y. M. C. A. style, but not without touches of real genius here and there, aggressive almost to a fault, making conciseness a foible, often saying old things in a way so new that they do not seem to be old, scorning logical cohesion, leaping directly and sometimes through vast spaces from one point to another, a man who has talked and thought much with professors and has the art of telling what he gets from them in a way to hold the attention of Sunday school pupils, a man whose Christianity is very muscular and who, if he were not known to be a good Christian, might often be thought to be an admirable pagan suckled in the creed of Epicurus;—such a man and such a book are not only striking, but to be heartily commended, for the reader will not find a dull line.

Erlebtes und Erstrebtes. Reden und Aufsätze, von OSKAR JÄGER. Beck, München, 1907. pp. 317.

For twenty-five years Dr. Jäger has been a gymnasial director and an honorary professor in the University of Bonn, and he here brings together twenty-six lectures and articles, arranged in chronological order, beginning with the year 1847. These papers treat of various important events in the history of education, especially secondary education in Germany, and by a wise and experienced teacher who has been in a position to be personally affected by them all and therefore to know them all. The book makes interesting reading in itself, but it also is an important contribution to the educational history of Germany in the last two or three decades.

Red Rubber, the story of the rubber trade on the Congo, by E. D. MOREL. Unwin, London, 1906. pp. 213.

This book is inscribed to the British Public and is an attempt to put in brief compass and at a trifling cost the story of the Congo tragedy. It is a pathetic story and a most effective one. The judicious reader will be intensely impressed by the activity of the author, by his ability, but these qualities rather overshadow his equipment in the way of impartiality. It is to us a little singular that the man chosen to write the preface should be the chief of one of the two great English companies lately chartered to exploit the resources of Liberia.

Stickney Readers, "Earth and Sky." No. 2, 2nd 3rd grade Nature Readers. Rev. ed. Ginn & Company, Boston, 1907.

The idea of these readers is very good, but much of their usefulness is lost through defects in the illustrations. Among such defects, viewed in the light of experimental studies of children's pictures, are the following: (a) The pictures are too small, most of them being marginal and thus on small pages with much reading matter. The few full page illustrations are usually in sections and so amount to several pictures. Large pictures would be much better, even if reading matter had to be sacrificed. (b) A general indistinctness of outline is very noticeable. Bolder lines and sharper contrasts are needed. (c) There are no colored pictures. Children of these early school years are predominantly interested in color, which should be in large patches, of distinct outline and sharp contrast. Blending and harmony of color need not be much attended to before adolescence.

J. W. HARRIS.

The Richmond Second Reader, by CELIA RICHMOND and HARRIET ESTELLE RICHMOND. Ginn & Co., Boston, 1907. pp. 134.

To an adult observer this book is beautiful; and from the child's standpoint it is to be commended for the number of pictures of children, and for the size of the pictures. But, the value of art masterpieces for second reader children is to be questioned, as the appreciation of such productions does not normally awaken till a few years later. Half tone reproductions are not so well seen by children as plainer drawings with bolder lines. Children need more of color and this should be in large patches, attention to fine blending and harmony not being essential. J. W. HARRIS.

NOTE.

The Children's Theatre. We have received a number of pamphlets and photographs and programmes of the children's theatre under the auspices of the Educational Alliance, 197 East Broadway, New York. Miss Hertz, who for the past three and a half years has been at the head of this movement, has brought out its educational features in an admirable way, so that those trained to form the casts find this work a potent force, educational, moral and social in their lives. The audiences are so great that children must always be turned away, although the theatre seats 700. Its influence does not extend north of Houston Street. The educational value of this movement can hardly be overestimated. It is a great pity that such theatres should not be multiplied and that this should not be given a more central location, so as to do far more good than it can accomplish in its present environment. Theatre work is coming to be recognized more and more in schools, in some of which, for instance, the Manual Training School in St. Louis, for many years under the control of Dr. Weitbracht, not only are plays given, but in the manual training department, everything pertaining to them is made and programmes are designed and printed, so that it makes a new unity for manifold interests. The educational possibilities of theatre work remain yet to be exploited by our American schools. That they are very high in their possibilities no one can doubt.